CURA, INC.
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PRELIMINARY ASSESSMENT FOR

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH SERVICE

COTTON INSECTS RESEARCH LABORATORY BROWNSVILLE, CAMERON COUNTY, TEXAS

TX7120599884

July 13, 1990

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Introduction

CURA, Inc. was retained by the U.S. Department of Agriculture - Agricultural Research Service (USDA ARS) to conduct a Preliminary Assessment of the Cotton Insects Research Laboratory. The facility address is: 414 Ringold Road, Brownsville, Texas 78520 (Figures 1 and 2). The site coordinates are: 25° 53' 35" N and 97° 29' 35" W (Ref. 1).

The statutory basis for conducting the Preliminary Assessment is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). CERCLA was established to create a tax on the chemical and petroleum industries and provide broad federal authority to respond directly to chemical releases (or threatened releases) that may endanger public health or the environment. This legislation is commonly known as Superfund. The National Contingency Plan (NCP) sets priorities for use of these federal funds by taking into account: 1) the population at risk, 2) the nature of the hazardous substances, 3) the potential for contamination of drinking water, 4) the potential for direct contact, and 5) the potential for destruction of ecosystems.

Section 120 of CERCLA was amended in 1986 by the Superfund Amendments and Reauthorization Act to require EPA to establish a special Federal Agency Hazardous Waste Compliance Docket based upon information submitted by federal agencies under RCRA and Section 103 of CERCLA. The first phase of the site evaluation process involves discovery (ARS - Hazardous Waste Questionnaire - May 1986), Preliminary Assessment (PA), Site Inspection (SI), and Hazard Ranking System (HRS) evaluation. Section 120 of CERCLA also required federal facilities to conduct PAs within a certain time frame. Under Executive Order 12580, the governing federal agency is responsible for performing PAs at federal facilities.

Although a specific site within the USDA facility may have been identified as a potential environmental concern, the whole facility was entered on the Federal Hazardous Waste Compliance Docket. Therefore, CURA evaluated the entire facility for conditions that might impact public health or the environment.

The owner and responsible party is the U.S. Department of Agriculture - Agricultural Research Service.

Site Description

Operations History - The facility began operations in 1953 and operated continuously until 1988 at which time all operations ceased. All personnel and equipment were relocated to Weslaco, Texas. The mission of the facility was to conduct research on parasitic nematodes, genetic resistance, population dynamics and pesticide toxicology. Currently, the facility is a holding center for Central and South American refugees and is operated by the Texas Key Program, a private organization.

Initially, CURA conducted on-site document review, interviews with employees, and on site reconnaissance. CURA reviewed site plans, building use descriptions, hazardous waste questionnaires, chemical inventory, and standard operating procedures for chemical storage, use, and disposal. CURA also reviewed analytical reports for soil samples collected on the facility. Since no USDA-ARS employees were on site, CURA interviewed nine employees at the Weslaco facility. Two of these employees had worked at the Brownsville facility and had first-hand knowledge of hazardous chemical use, storage, and disposal. The employees interviewed were a research scientist and a research technician. During the on-site reconnaissance on April 3, 1990, the CURA field team observed and photographed numerous buildings including the chemical storage building and the warehouse. The CURA field team also observed and photographed the field test plots and the chemical disposal pit.

The site has seventeen buildings, several field plots, and greenhouses. Pesticides and herbicides were sprayed on the field plots during the growing season. Some lab chemicals and pesticides were stored in Building 14 (Photograph 2). At the southeast corner of the building, an outdoor sink was used for rinsing field sprayers. During operations, some of the rinse material was spilled on the ground (Photograph 3).

Interviews indicated that nothing would grow in the spill area (Ref. 2). However, during the time of the site reconnaissance, grass was growing over the area. The building was nailed shut and fenced.

A large warehouse was also used for chemical storage (Photograph 4). According to interviews, only one eighth of the building was used for chemical storage (Ref. 2). Stains were present on the concrete slab inside the warehouse where the chemicals were stored. On the east side of the structure a concrete pad had several stains from drums. The warehouse doors had been removed providing free access to the building.

A fenced area on the northwest side of the warehouse contained dead grass (Photographs 5 and 6). According to interviews, this area contains a 3 foot deep pit used for disposal of lab chemicals and possibly experimental pesticides (Ref. 2). The gate to this area was open at the time of the site reconnaissance. APHIS operated a chemical storage building east of the warehouse. Only a slab of the building remains.

Emergency and Remedial Action - No emergency actions have been reported at the site.

Sampling and Analysis Data - The U.S. Department of Justice and the USDA-ARS have both sampled the facility. The analytical results from the Department of Justice were not available for review. The sampling conducted for the USDA-ARS was an extensive sampling program with eighty samples collected and analyzed for organophosphates, carbamates and chlorinated pesticides (Ref. 3). These samples were collected from the field plots and around buildings. Low levels of pesticides were found in many of the samples. The sampling conducted by USDA-ARS also focused on the disposal pit and the spill area near Building 14. The analytical results revealed that the soil in both locations was contaminated with lab chemicals and low levels of pesticides.

Some QA/QC data was available, i.e., spike and blank results, but there were no duplicate results or raw data for review. In addition, no information was available on

sampling techniques. Interviews indicated that the depth of burial in the disposal pit was approximately three feet (Ref. 4). However, the samples collected in the pit were only to a depth of one foot (Ref. 3, Sample #1).

Waste Containment/Hazardous Substance Identification

Interviews indicated that lab chemicals and possibly experimental pesticides were buried in the disposal pit adjacent to the warehouse. The other area of concern identified in interviews was Building 14 where field sprayers were rinsed at an outdoor sink (Ref. 2). Extensive soil sampling conducted for the USDA-ARS confirmed that these areas were contaminated.

Lab chemicals in the disposal pit were acetone, phenol, hexachloroethane, naphthalene, dimethylphthalate, methylene chloride, 2-butanone, toluene, and diethylphthalate in concentrations ranging from 16 ppb for toluene (Sample #1, surface) to 2,100 ppb for hexachloroethane (Sample #1, 0-12 inches). DDT (plus metabolites DDD and DDE) was present at 0.154 ppm (Sample #1, 0-12 inches). Lab chemicals in the spill area near Building 14 were methylene chloride, acetone, 2-butanone, hexachloroethane, naphthalene, dimethylphthalate, and di-n-butylphthalate in concentrations ranging from 49 ppb for 2-butanone (Sample #2, surface) to 1,350 ppb for hexachloroethane (Sample #2, surface). DDT (plus metabolites DDD and DDE) levels were 9.443 ppm in the subsurface sample (Sample #2, 0-12 inches).

Low levels of pesticides were found in the field plots and around on-site buildings. DDT (plus its metabolite DDE) ranged from none detected to 159 ppm (Ref. 3). The lowest level detected was 0.009 ppm (Field Plot F-2) and the highest level detected was 159 ppm (Field Plot I-9). The next highest level detected was 4.09 ppm (Field Plot I-10). The sample with 159 ppm was collected where an outdoor sink had been used to rinse spray equipment (Ref. 5).

There is no containment, i.e., berm or liner, of the contaminated areas. Most of the facility is fenced and access controlled by guards. Building 14 is fenced and nailed shut. The warehouse is not fenced and is open to access. The disposal pit is fenced; however, the gate was open at the time of the site reconnaissance. The amount of chemicals placed in the pit is not known.

Pathway Characteristics

Groundwater Pathway

The site is in Cameron County located in the southern most portion of the Texas Gulf Coast Plain. The soils in the site area belong to the Rio Grande - Matamoros Soil Association. Onsite soils are classified as Rio Grande - Urban Land Complex. The soils are silty loams and very fine sandy loams with moderate permeability (Ref. 6). Regional geology can be described as cross-cutting and overlapping layers of fluvial, lacustrian and eolian sediments over a thick progradational deltaic and continental - slope platform (Ref. 7).

Surface Water

There is very little runoff from the site due to little rainfall and the moderate permeability of the surface soils. However, surface water runoff would drain into the Fort Brown Resaca approximately 800 feet north of Building 14 (Ref. 1). The Fort Brown Resaca is a small lake utilized for recreational purposes. There are no drinking water intakes on the resaca. The site has no upgradient drainage area. A levee is present at the southern boundary of the site which separates the facility from a golf course.

The Rio Grande River is 400 feet west of the warehouse disposal pit. A levee separates the site from the river (Ref. 1).

Air Pathway

The pesticides, insecticides and some of the organic compounds bind strongly to the soil and do not present a threat via the air route. Several solvents were also identified in the analytical results (Ref. 3). These chemicals are typically very volatile; however, since the soil is not disturbed and the concentrations are not extremely high, the potential for a measurable release to the atmosphere is small. The grass covering the soil would prevent particulate mobility.

Onsite

The majority of the facility is currently a holding area for Central and South American refugees. Two guard posts control site access to the holding area which includes all of the site buildings except the warehouse. A fence is present around Building 14 and the doors are nailed shut. Several other buildings are boarded shut. All other areas are open to access. The warehouse building is not fenced and the doors have been removed. The twenty square foot disposal area is fenced. However, the gate was open at the time of the site reconnaissance. Dead grass and weeds were inside the fenced area (Photograph 5).

Targets

There is a potential for groundwater contamination by the lab chemicals dumped into the disposal pit, due to the shallow groundwater (twelve feet) in the site area and the moderate permeability of the soil (Ref. 8). However, there are no known drinking water wells in a three mile radius of the site. The city water supply is obtained from the Rio Grande River. The intake on the Rio Grande River is approximately 2.5 miles northwest, upstream, of the site (Ref. 8).

Surface water runoff from the site would enter the Fort Brown Resaca. There is very little runoff from the site due to the low rainfall and moderate permeability of the surface soils. Fort Brown Resaca is used for contact recreation and fishing, but has no drinking water intakes.

The refugees housed at the USDA ARS facility are the nearest individuals to Building 14. Any passerby could approach the old warehouse. The strong soil binding properties of the pesticides and herbicides and the low concentrations of the volatile organic chemicals create a low potential for a release to the air.

Several endangered species were identified in the site area; however, it is not known which if any of the endangered species are within a one mile radius of the site (Ref. 9).

Recommendations

CURA recommends no further action at the USDA ARS Brownsville facility with regard to CERCLA requirements. The evaluation of the migration pathways revealed that the potential for the disposal pit and the spill area near Building 14 to impact the environment is low. Groundwater in the site area is not used. The level topography and distance to the nearest surface water mitigate against contamination of the Fort Brown Resaca, which has only recreational uses. Onsite contact with the spill area has been limited by the use of barriers. The disposal pit is fenced and the gate should be locked.

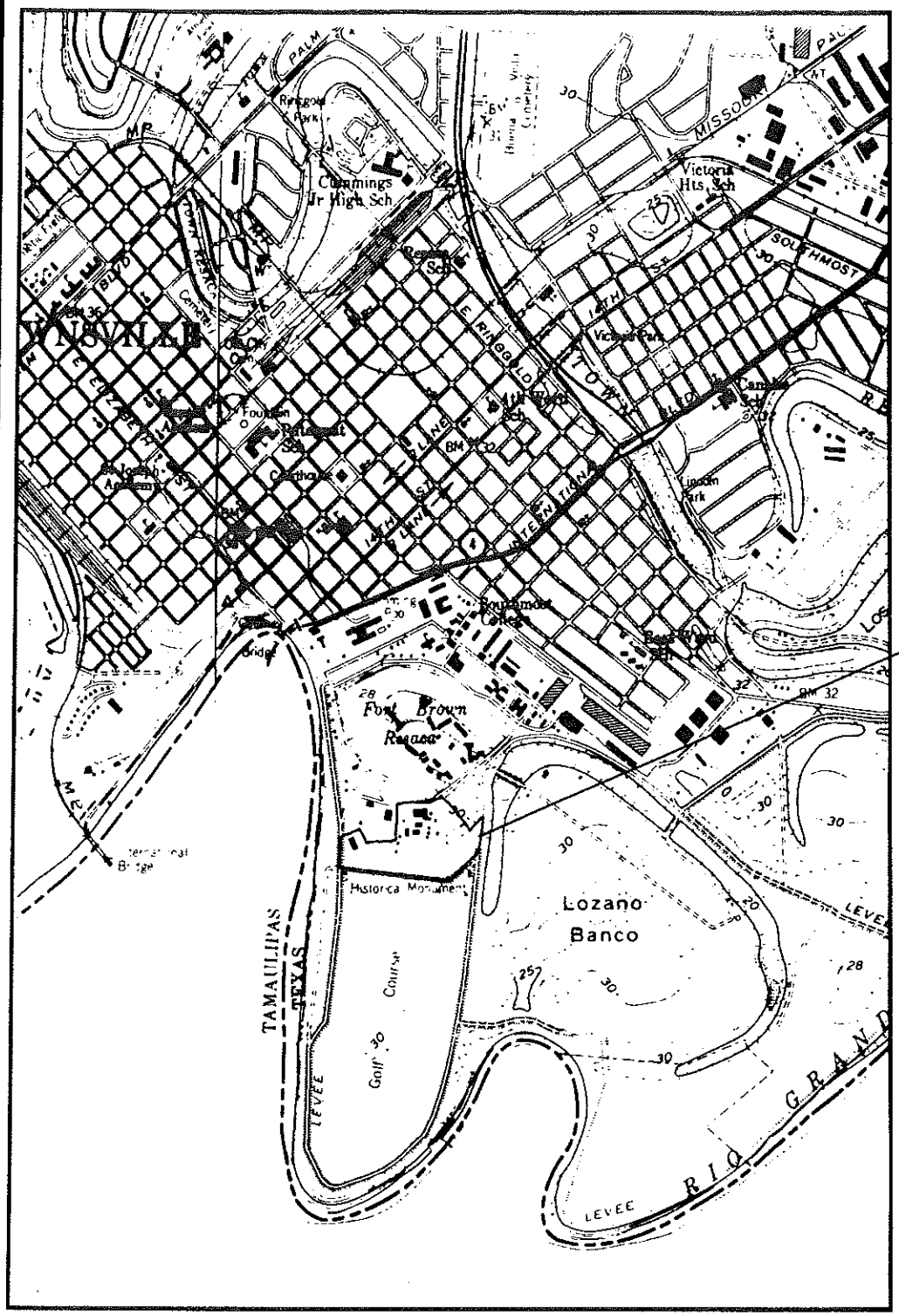
Summary

CURA conducted the Preliminary Assessment in three phases. In the first phase, CURA reviewed documents initially presented for on-site document review, and conducted interviews with key employees. Interviews focused on chemical disposal methods at the facility, specifically the disposal of the chemicals used in the greenhouse, field test plots, and laboratory operations. CURA learned of the disposal pit on the northwest side of the warehouse, the spill area near Building 14 resulting from rinsing of field sprayers at an outdoor sink, and the warehouse used for chemical storage. CURA also learned of the existence of sampling and analysis data provided by a previous contractor.

Based upon information obtained in interviews, CURA conducted an on-site reconnaissance of the facility, specifically requesting to see the disposal pit, the spill area near Building 14, and the warehouse. CURA conducted follow-up interviews and departed the facility with a copy of the soil sampling and analysis report prepared by a previous contractor.

In the second phase of the PA, CURA collected off-site information about pathway characteristics and potential targets of contaminant migration. This information included geology of the Brownsville area, groundwater use in the vicinity of the laboratory, and sources of drinking water for the City of Brownsville.

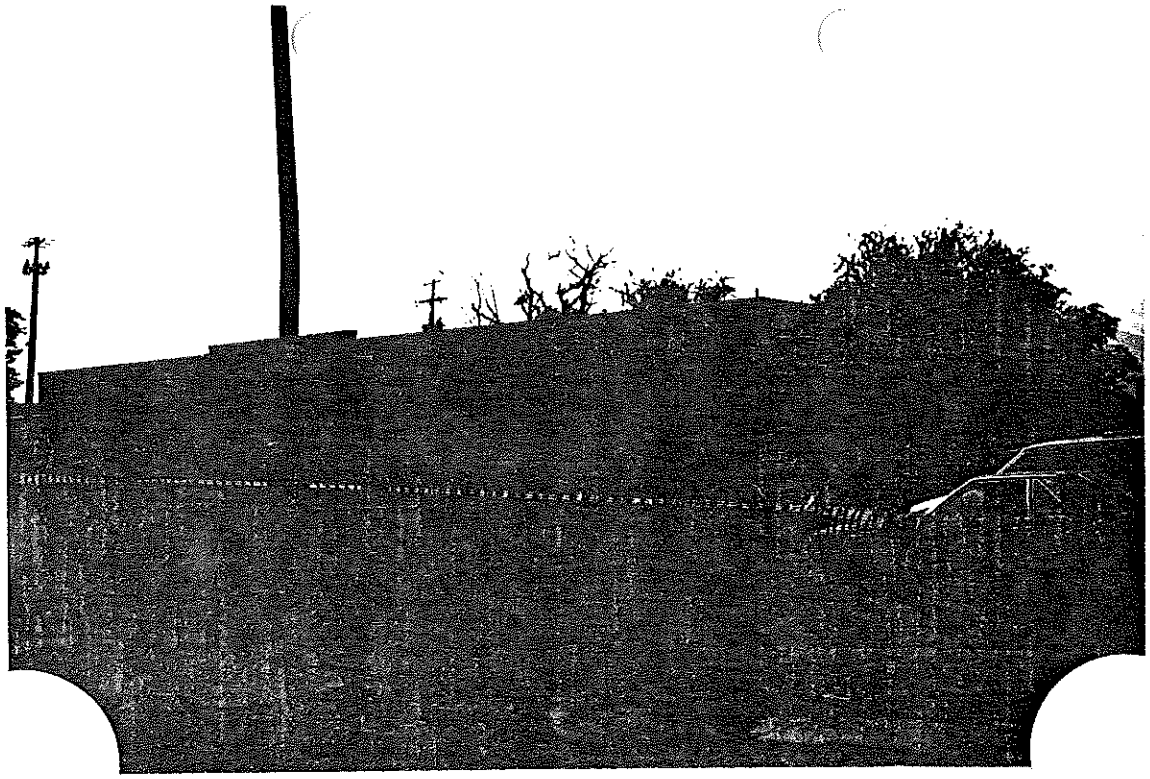
In the final phase, CURA analyzed target information with regard to identity and quantity of chemicals in the disposal pit and spill area near Building 14 and recommended no further action with regard to CERCLA requirements.



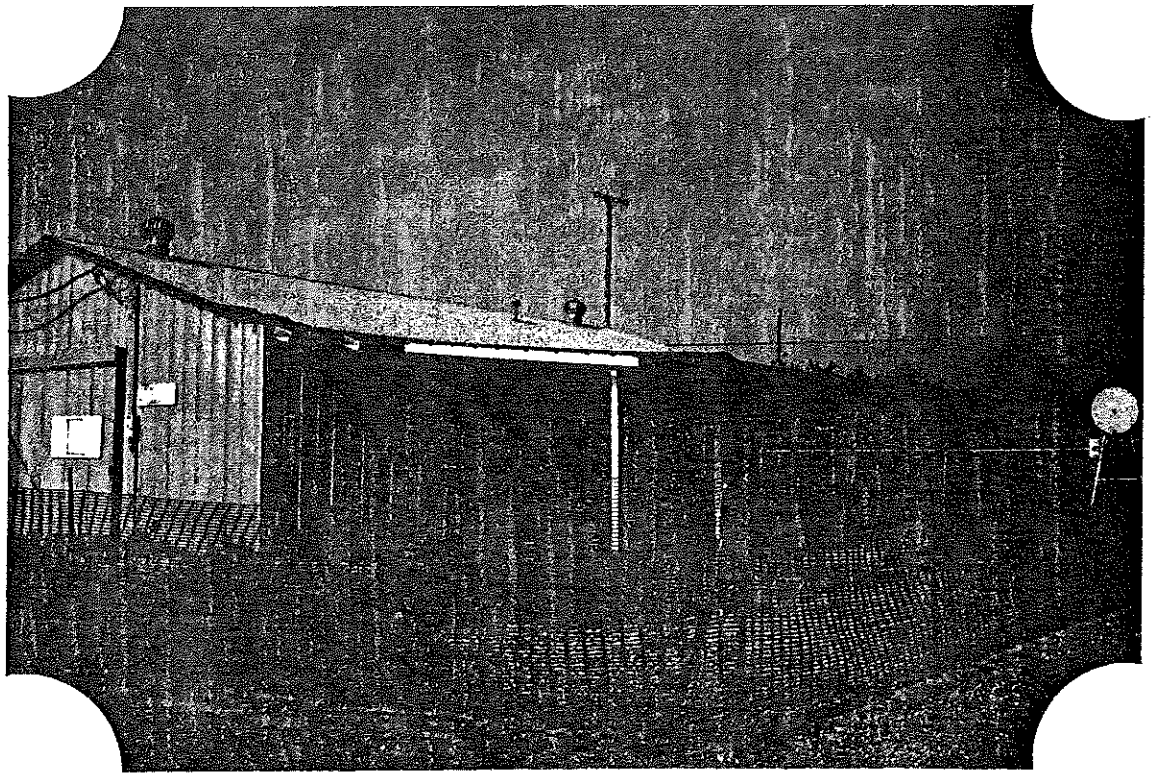
TOPOGRAPHIC MAP

REF: USGS EAST BROWNSVILLE, TEXAS QUADRANGLE
1955 PHOTOREVISED 1989

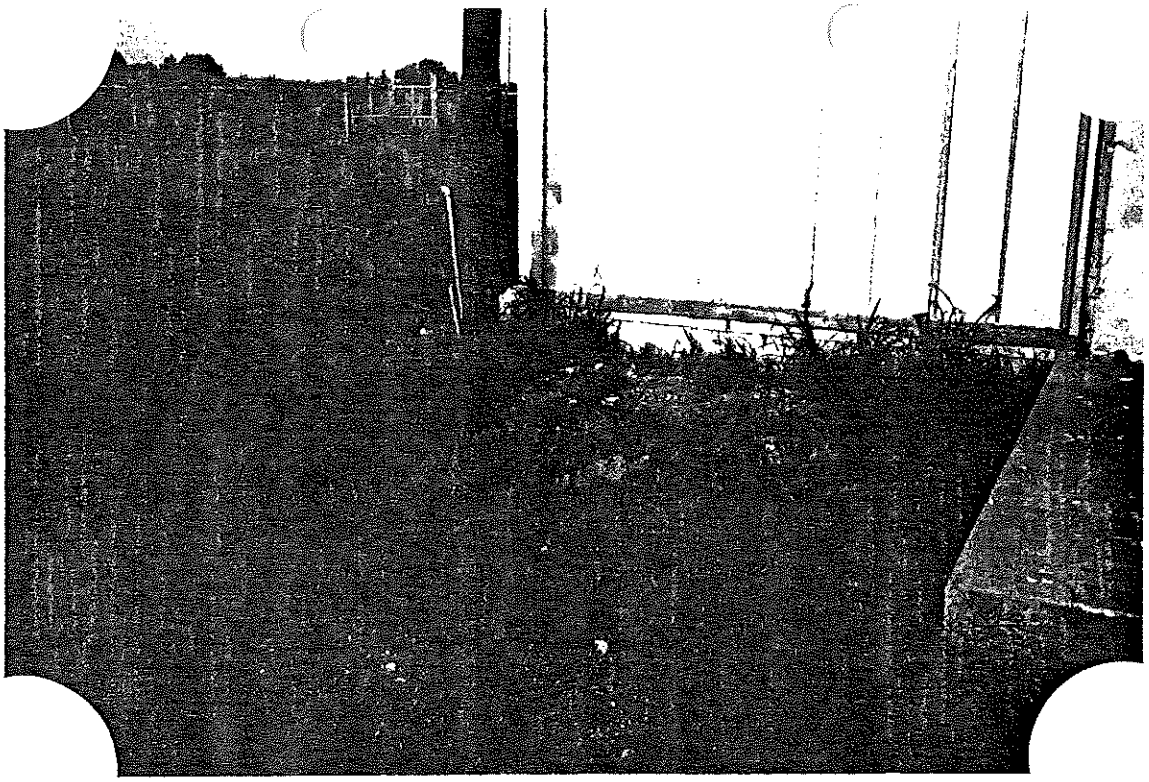
CURA INC. 2209 WISCONSIN, #400 – DALLAS, TEXAS 214 620-7117	USDA-ARS COTTON INSECTS RESEARCH LABORATORY BROWNSVILLE, TEXAS	DATE: JULY 1990	SCALE: 1"≃ 2000'
		PROJECT NO. 33-90290	FIGURE NO. 1



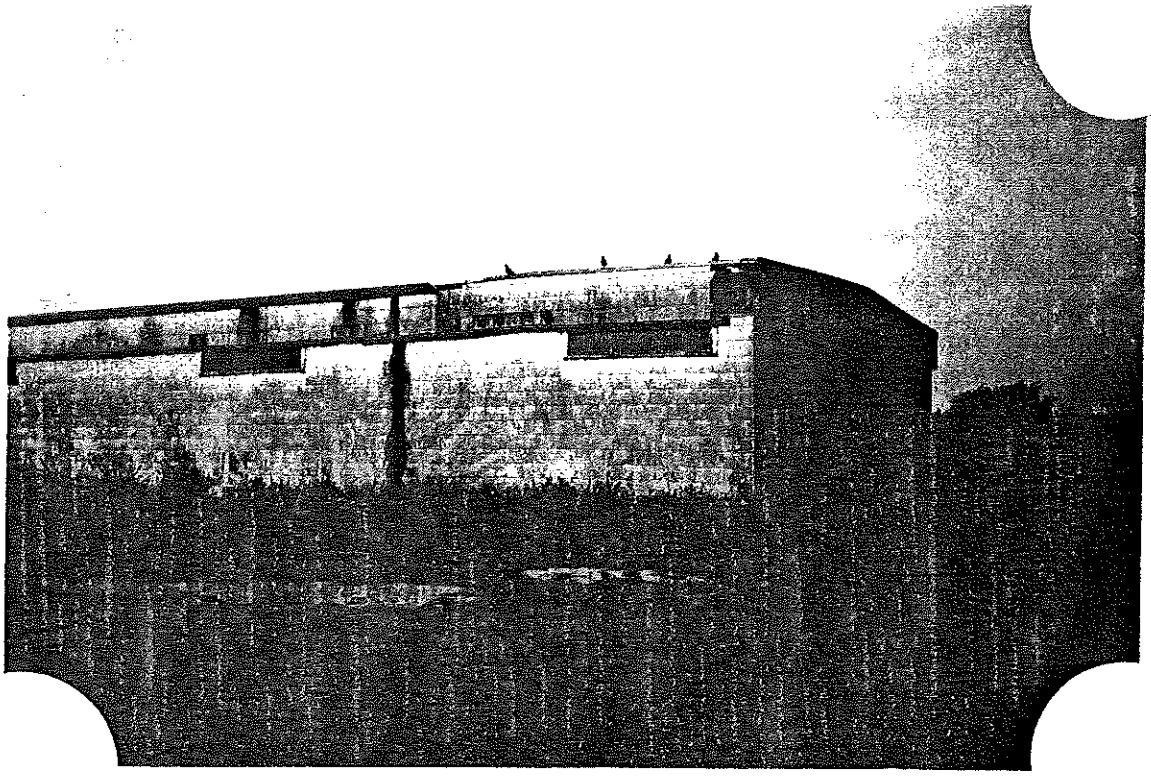
Photograph 1: View of one of the converted lab buildings at the northern edge of the facility facing southeast.



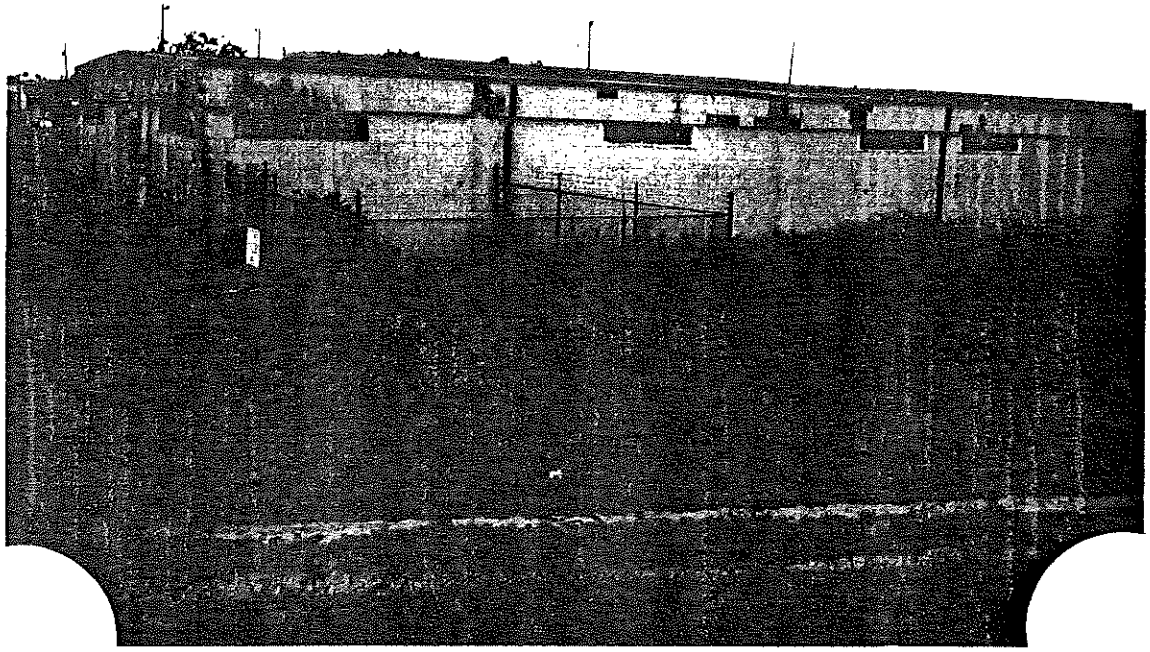
Photograph 2: View of building 14 facing southwest. Note the fence surrounding the building.



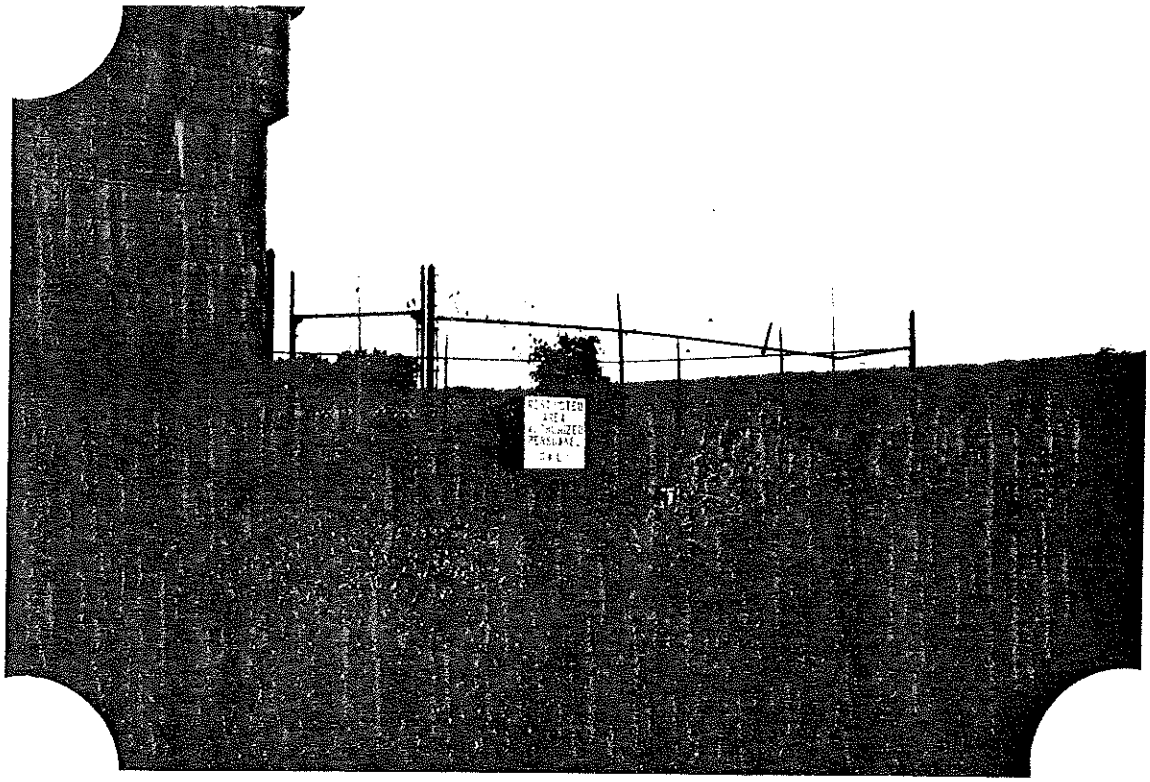
Photograph 3: The southeast corner of building 14. The pipe adjacent to the utility pole is near the location of the spill area facing southwest.



Photograph 4: The warehouse where chemicals were stored facing southwest.



Photograph 5: The fenced disposal pit area facing east. Note the gate is open.



Photograph 6: View of the fenced disposal pit area facing southwest.

References

1. USGS East Brownsville Quadrangle, Texas, 7.5 Minute Series Topographic Map, 1955, photorevised 1983.

2. ROC. TO: Ed Stein, USDA ARS, Weslaco, TX. FROM: Victor Cason, CURA, Inc. April 3, 1990. RE: Building 14, warehouse and general information on the site.

3. Analytical results for USDA ARS Brownsville facility. Fox Testing Laboratories, Inc.

4. ROC. TO: Jim Raulston, USDA ARS, Weslaco, TX. FROM: Victor Cason, CURA, Inc. April 2, 1990. RE: Disposal practices at the Brownsville site.

5. ROC. TO: Ed Stein, USDA ARS, Weslaco, Texas. FROM: Victor Cason, CURA, Inc. June 14, 1990. RE: Elevated contamination near one site building.

6. Williams, DeWayne, et al. Soil Survey of Cameron County, Texas. U.S. Department of Agriculture, Soil Conservation Service, U.S. Government Printing Office, Washington, D.C. May 1977.

7. McCoy, T. Wesley. Evaluation of Ground-Water Resources in the Lower Rio Grande Valley, Texas. Texas Water Development Board. January 1990.

8. ROC. TO: Richard Ocanas, City of Brownsville Water Department. FROM: Victor Cason, CURA, Inc. May 29, 1990. RE: Water source(s), uses of groundwater, and location of intakes.

9. Sullivan, Dorinda, Texas Natural Heritage Program. Endangered species. May 30, 1990.

RECORD OF COMMUNICATION

PROJECT NUMBER: 33-90290

☐ PHONE ☒ INTERVIEW

PROJECT NAME: USDA ARS BROWNSVILLE

NAME: ED STEIN COMPANY: USDA ARS ADDRESS: BROWNSVILLE PHONE:	CURA CONTACT NAME: VICTOR CASON 214-620-7117	DATE: 4/3/90 TIME: 0945

SUBJECT: BUILDING 14, WAREHOUSE AND GENERAL INFORMATION ON THE SITE.

SUMMARY: CHEMICALS WERE STORED IN BUILDING 14 AND THE WAREHOUSE. SOME ODORS CAN BE DETECTED IN BUILDING 14. AN OUTDOOR SINK WAS LOCATED AT THE SOUTHEAST CORNER OF THE BUILDING AND WAS USED ~~TO~~ FOR RINSING ORCHARD ~~S~~SPRAYERS. SOME OF THE RINSE WATER WAS SPILLED ON THE GROUND. NO GRASS WOULD GROW ON THE SPILL AREA. ONLY ABOUT 1/8~~TH~~ OF THE WAREHOUSE SPACE HELD CHEMICALS. THE FENCED AREA ~~E~~S ADJACENT TO THE WAREHOUSE WAS USED AS A CHEMICAL BURIAL PIT. THE JUSTICE DEPT. SAMPLED THE BROWNSVILLE FACILITY PRIOR TO ALLOWING REFUGEES TO INHABIT THE SITE. Victor Cason

~~ACTIONS:~~

COPIES TO:

T9604.01004

FOX TESTING *Laboratories, Inc.*

AGRICULTURAL & INDUSTRIAL CHEMISTS

SUBJECT: Analysis for pesticide residues in soil at former U.S.D.A. facility in Brownsville, Texas.

TO: Ed Stein, Safety and Health Committee
United States Department of Agriculture
Weslaco, Texas

FROM: Fox Testing Laboratories, Inc.
211 East Monroe
Harlingen, Texas

Ref. 3

FOX TESTING *Laboratories, Inc.*

AGRICULTURAL & INDUSTRIAL CHEMISTS

SAMPLING PLAN

SAMPLE #1 - Fenced area - 30 ft. x 20 ft.
12 samples will be taken from random points and then composited. Samples will be 2 feet deep and 0 - 3 inches.

SAMPLE #2 - Caliche and soil area located where used containers were rinsed - 20 ft. x 20 ft. plot. Twelve 2 ft. and 0 - 3 inches deep samples will be taken from random points and then composited.

SAMPLE #3 - #15 will come from along the fence line. A composite sample will be taken every 300 ft. of fence line. Total of 12 samples.

SAMPLE #16 - #27 will come from around the various buildings. There will be 12 composite samples.

The remaining samples will be taken from the field plots. The following is a description of how the field plots are divided. There will be two samples taken from each sub-plot. From each of the sub-plots we will take 12 samples from 0 - 3 inches. These twelve samples will be composited into one sample.

Also from each of the sub-plots we will take 12 samples from 3 - 12 inches. These twelve samples will be composited into one sample.

FIELD PLOT A - 100 ft. x 400 ft. rectangle
Plot A will be divided into two 200 ft. x 100 ft. sub-plots (A1 - A2) 4 total samples.

FIELD PLOT B - 100 ft. x 200 ft. rectangle
Plot B will be divided into one 200 ft. x 100 ft. sub-plot. (B1) - 2 total samples.

FIELD PLOT C - 100 ft. x 200 ft. rectangle
Plot C will be divided into one 200 ft. x 100 ft. sub-plot. (C1) - 2 total samples.

FIELD PLOT D - 300 ft. x 400 ft. rectangle
Plot D will be divided into four 200 ft. x 150 ft. sub-plots. (D1 - D4) - 8 total samples.

FIELD PLOT E - 300 ft. x 500 ft. rectangle
Plot E will be divided into eight 100 ft. x 150 ft. sub-plots. (E1 - E8) - 16 total samples.

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AGRICULTURAL & INDUSTRIAL CHEMISTS

FIELD PLOT F - 300 ft. x 300 ft. x 440 ft. triangle
Plot F will be divided into three 100 ft. x 100 ft. sub-plots and three other smaller than 10,000 sq. ft. sub-plots. (SEE MAP)
(F1 - F6) - 12 total samples.

FIELD PLOT G - 200 ft. x 200 ft. x 400 ft. triangle
Plot G will be divided into 4 sub-plots all having an area less than 10,000 sq. ft.
(G1 - G4) - 8 total samples.

	COMPOSITED SAMPLES
Sample #1	2
Sample #2	2
Field Plot A	4
Field Plot B	2
Field Plot C	2
Field Plot D	8
Field Plot E	16
Field Plot F	12
Field Plot G	8
Sample #3 - #15 Along Fence Perimeter	12
Sample #16 - #27 Around Select Buildings	12
Grand Total	80 Composited Samples

(80 - 83) Composited Sample Range

Sample Cost - $300.00 per sample (includes sampling)

Total Project Cost - $24,000.00

It will take no longer than 15 weeks to complete the project.

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FOX TESTING *Laboratories, Inc.*

AGRICULTURAL & INDUSTRIAL CHEMISTS

The following is a list of the major compound that we will be screening for. We will also identify any others found.

ORGANO PHOSPHATES

Methyl Parathion
Parathion
Ethion
Methyl Trithion
Dursban
Malathion
Azodrin
Bidrin
Guthion

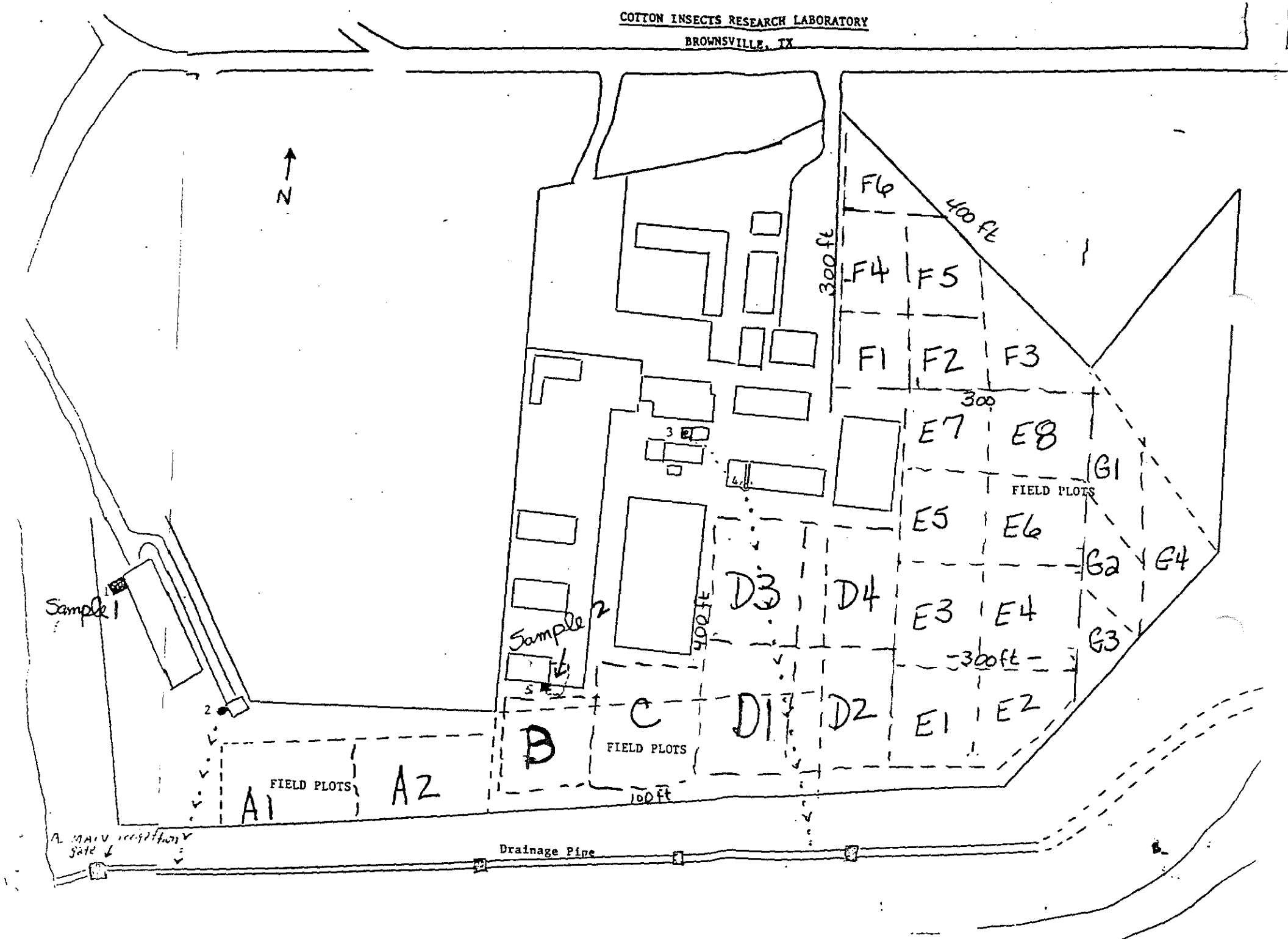
CARBAMATES

Aldicarb
Carbanolate
Curbaryl
Curbofuran
Decarbofuran
Landrin
Mexacarbate
Promecarb

CHLORINATED PESTICIDES

BHC
Heptachlor
Aldrin
Heptachlor Epoxide
DDD
DDE
DDT
Dieldrin
Endrin
Toxaphene
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Methoxychlor

All methods used from sampling to final analysis will be E.P.A. approved. All methods will be provided with the final reports.


COTTON INSECTS RESEARCH LABORATORY
BROWNSVILLE, TX
N
F6
400 ft
300 ft
F4
F5
F1
F2
F3
300
E7
E8
G1
FIELD PLOTS
E5
E6
G2
G4
D3
D4
E3
E4
G3
400ft
300ft
Sample 1
Sample 2
D1
D2
E1
E2
B
C
FIELD PLOTS
A1
A2
FIELD PLOTS
100ft
Drainage Pipe

Date Completed _____

Lab # Spiked- 108640 for Sample #'s 108636 - 108647

H - 5

	Spike Level (ppm)	Blank Concentration (ppm)	Spike Concentration (ppm)	% Recovery
Methoxychlor	0.1557	ND	0.099	64%
Heptachlor	0.0933	ND	0.0645	69%
Dieldrin	0.2033	0.079	0.2464	82%
Endosulfan I	0.1970	ND	0.073	37%
Aldrin	0.1470	ND	0.1036	70%
Alpha BHC	0.2413	ND	0.2512	104%

Lab Completed _____

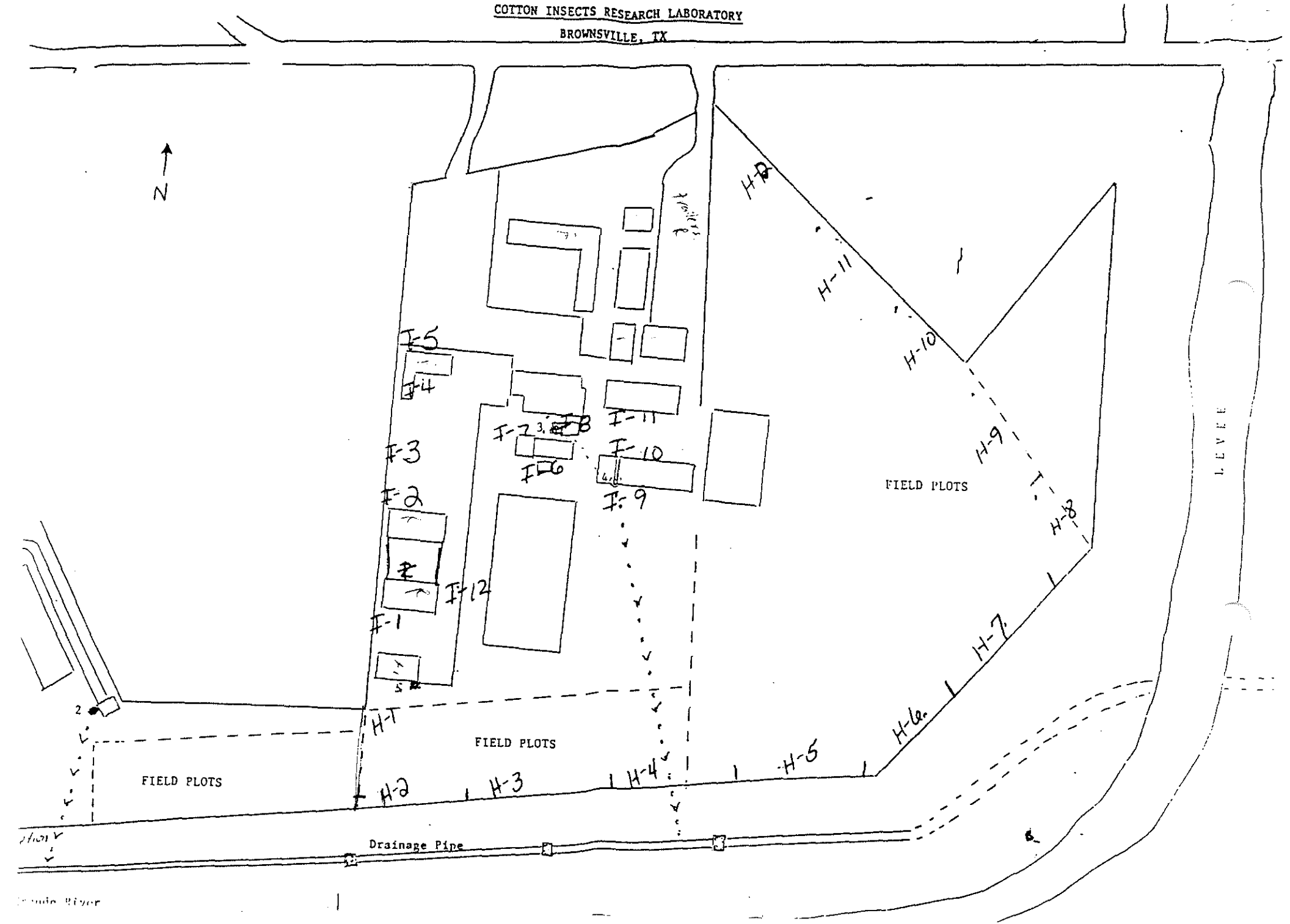
Lab # Spiked- 108643 for Sample #'s 108636 - 108647

H - 8

	Spike Level (ppm)	Blank Concentration (ppm)	Spike Concentration (ppm)	% Recovery
Fenthion	0.0663	ND	0.0637	96%
Methyl Parathion	0.0680	ND	0.0406	60%

COTTON INSECTS RESEARCH LABORATORY

BROWNSVILLE, TX



Soil sample identification
USDA-ARS-SPA
Brownsville, Texas

SAMPLES FROM ARS AFFECTED AREA:

		Inches			Inches			
1.	A1	0-3	41.	F5	0-3	80.	Lincoln Park 0-3	
2.	A1	3-12	42.	F5	3-12	81.	Humphreys Farm White Field 0-12	
3.	A2	0-3	43.	F6	0-3	82.	Humphreys Farm Forty Field 0-12	
4.	A2	3-12	44.	F6	3-12	83.	USDA Soil in Run off area Surfac	
5.	B1	0-3	45.	G1	0-3	84.	USDA Sample 1	0-3
6.	B1	3-12	46.	G1	3-12	85.	USDA Sample 1	3-12
7.	C1	0-3	47.	G2	0-3	86.	USDA Sample 2	0-3
8.	C1	3-12	48.	G2	3-12	87.	USDA Sample 2	3-12
9.	D1	0-3	49.	G3	0-3			
10.	D1	3-12	50.	G3	3-12		Limits of Detection	
11.	D2	0-3	51.	G4	0-3			
12.	D2	3-12	52.	G4	3-12			
13.	D3	0-3	53.	H1	0-2			
14.	D3	3-12	54.	H2	0-2			
15.	D4	0-3	55.	H3	0-2			
16.	D4	3-12	56.	H4	0-2			
17.	E1	0-3	57.	H5	0-2			
18.	E1	3-12	58.	H6	0-2			
19.	E2	0-3	59.	H7	0-2			
20.	E2	3-12	60.	H8	0-2			
21.	E3	0-3	61.	H9	0-2			
22.	E3	3-12	62.	H10	0-2			
23.	E4	0-3	63.	H11	0-2			
24.	E4	3-12	64.	H12	0-2			
25.	E5	0-3	65.	I1	0-2			
26.	E5	3-12	66.	I2	0-2			
27.	E6	0-3	67.	I3	0-2			
28.	E6	3-12	68.	I4	0-2			
29.	E7	0-3	69.	I5	0-2			
30.	E7	3-12	70.	I6	0-2			
31.	E8	0-3	71.	I7	0-2			
32.	E8	3-12	72.	I8	0-2			
33.	F1	0-3	73.	I9	0-2			
34.	F1	3-12	74.	I10	0-2			
35.	F2	0-3	75.	I11	0-2			
36.	F2	3-12	76.	I12	0-2			
37.	F3	0-3	SAMPLES FROM NONAFFECTED AREA:					
38.	F3	3-12	77.	Lloyd Horn Farm Surface				
39.	F4	0-3	78.	Garry Whilms Farm Surface				
40.	F4	3-12	79.	E. Bville Little League Park Surface				

SPIKE REPORT

Date Completed- 7/28/89

Lab # Spiked- A for Sample #'s A-1 - A-2

	Spike Level (ppm)	Blank Concentration (ppm)	Spike Concentration (ppm)	% Recovery
Beta BHC	0.0320	ND	0.038	119%
Lindane	0.030	ND	0.031	103%
Aldrin	0.037	ND	0.029	78%
OP DDE	0.031	Noise 0.023	0.056	106%
44 DDD	0.036	ND	0.046	128%
OP DDD	0.033	ND	0.034	103%
Methoxychlor	0.039	ND	0.015	38%
Dieldrin	0.0610	0.017	0.068	84%
Endosulfan I	0.0788	ND	0.059	75%
Endosulfan II	0.0719	ND	0.065	90%

FOX TESTING *Laboratories, Inc.*

211 E. Monroe St. P. O. Box 346 Telephone (512) 423-3196
Harlingen, Texas 78550

CERTIFICATE OF ANALYSIS

8/9/89

TO USDA - ARS Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 7/20/89

IDENTIFICATION MARKS F - 2 0-3 inches

Diazanone	0.022 ppm
Dieldrin	0.005 ppm
44 DDE	0.009 ppm

Fee $_____

Lab. No. 109515 Sample By Laboratory Personnel **FOX TESTING** *Laboratories, Inc.*

FORM PLI-200 - 5M - 6-79

FOX TESTING *Laboratories, Inc.*

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Harlingen, Texas 78550

CERTIFICATE OF ANALYSIS

8/9/89

TO USDA - ARS Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 7/20/89

IDENTIFICATION MARKS F - 2 3-12 inches

Diazanone----------0.041 ppm

Dieldrin----------0.006 ppm

44 DDE----------0.017 ppm

Fee $_____

Lab. No. 109516 Sample By Laboratory Personnel **FOX TESTING** *Laboratories, In*

FORM PLI-200 - 3M - 6-79

FOX TESTING *Laboratories, Inc.*

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CERTIFICATE OF ANALYSIS

11/13/89

TO USDA-ARS, Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 11/1/89

IDENTIFICATION MARKS I-10

44 DDE	2.98 ppm
44 DDT	1.08 ppm
Dieldrin	0.175 ppm
Endrin	0.140 ppm
Diazanone	0.055 ppm

Fee $_____

Lab. No. 111746 Sample By Lab Personnel **FOX TESTING** *Laboratories, Inc*

FORM PLI-200 - 5M - 6-79

FOX TESTING *Laboratories, Inc.*

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CERTIFICATE OF ANALYSIS

11/13/89

TO USDA-ARS, Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 11/1/89

IDENTIFICATION MARKS I-9

op' DDE	1.17 ppm
op' DDD	5.90 ppm
pp' DDE	10.57 ppm
pp' DDD	9.38 ppm
op' DDT	20.2 ppm
pp' DDT	112 ppm
Dieldrin	3.57 ppm
Endrin	4.80 ppm
Diazanone	0.025 ppm

Fee $_____

Lab. No. 111745 Sample By Lab Personnel **FOX TESTING** *Laboratories, Inc.*

FORM PLI-200 - 1M - 6-79

FOX TESTING *Laboratories, Inc.*

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Harlingen, Texas 78550

CERTIFICATE OF ANALYSIS

11/16/89

TO USDA-ARS, Southern Plains Area
1912 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 10/12/89

IDENTIFICATION MARKS Sample #1 Surface

Antimony	0.02 mg/L
Arsenic	less than 0.005 mg/L
Beryllium	less than 0.01 mg/L
Cadnium	less than 0.01 mg/L
Chromium	less than 0.05 mg/L
Copper	0.02 mg/L
Lead	0.05 mg/L
Mercury	less than 0.001 mg/L
Nickel	0.02 mg/L
Selenium	less than 0.005 mg/L
Silver	less than 0.01 mg/L
Thallium	less than 0.05 mg/L
Zinc	0.35 mg/L

Volatile and Semivolatile Organics

Acetone	480 ppb
Phenol	370 ppb
Naphthalene	88 ppb
Dimethylphthalate	754 ppb
Methylene Chloride	90 ppb
2 Butanone	122 ppb
Toluene	16 ppb
Diethylphthalate	882 ppb

Pesticides and Herbicides

None Detected---Limit of Detection 0.010 ppm

Fee $_____

Lab. No. 111796 Sample By Lab Personnel

FORM PLI-200-5M-6-79

FOX TESTING *Laboratories, Inc.*

FOX TESTING *Laboratories, Inc.*

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Harlingen, Texas 78550

CERTIFICATE OF ANALYSIS

11/16/89

TO USDA-ARS, Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 10/12/89

IDENTIFICATION MARKS Sample #2 Surface

Antimony	0.03 mg/L
Arsenic	less than 0.005 mg/L
Berrullium	less than 0.01 mg/L
Cadmium	less than 0.01 mg/L
Chromium	less than 0.05 mg/L
Copper	0.04 mg/L
Lead	0.40 mg/L
Mercury	less than 0.001 mg/L
Nickel	less than 0.1 mg/L
Selenium	less than 0.005 mg/L
Silver	less than 0.01 mg/L
Thallium	less than 0.5 mg/L
Zinc	0.85 mg/L

Volatile and Semivolatile Organics

Methylene Chloride	67 ppb
Acetone	243 ppb
2 Butanone	49 ppb
Hexachloroethane	1350 ppb
Naphthalene	69 ppb

Pesticides and Herbicides

44 DDE	0.388 ppm
Endrin	0.167 ppm
44 DDD	0.086 ppm
44 DDT	0.905 ppm

Fee $_____

Lab. No. 111798 Sample By Lab Personnel FOX TESTING *Laboratories, Inc.*

ever, whether this is a central or local action is not yet clear. Chronically, DDT produces microscopic changes in the liver and kidneys in some exper animals. This has not been demonstrated in man. DDT is secreted in the milk and, as an acid derivative is excreted in the urine of rabbits, dogs and man. DDT and certain of its degradation products, particularly DDE, are stored in fat. Such storage results either from a single large dose or from repeated small doses. DDT stored in the fat is at least largely inactive since a greater total dose may be stored in an exper animal than is sufficient as a lethal dose for that same animal if given at one time. A study based on 75 human cases reported an average of 5.3 ppm of DDT stored in the fat. A higher content of DDT and its derivatives (up to 434 ppm of DDE and 648 ppm of DDT) was found in workers who had very extensive exposure. Without exception, the samples were taken from persons who were either asymptomatic or suffering from some disease completely unrelated to DDT. Careful hospital examination of workers, who had been very extensively exposed and who had volunteered for examination revealed no abnormality which could be attributed to DDT. Much higher levels than have been found in man have been observed in the fat of exper animals which were apparently asymptomatic. DDT stored in the fat is eliminated only very gradually when further dosage is discontinued. After a single dose, the secretion of DDT in the milk and its excretion in the urine reach their height within a day or two and continue at a lower level thereafter.

Dangerous Acute Dose in Man: A dose of 20 g has proved highly dangerous though not fatal to man. This dose was taken by 5 persons who vomited an unknown portion of the material and even so recovered only incompletely after 5 weeks. Smaller doses produced less important symptoms with relatively rapid recovery. Exper ingestion of 1.5 g resulted in great discomfort and moderate neurological changes including paraesthesia, tremor, moderate ataxia, exaggeration of part of the reflexes, headache, and fatigue. Vomiting followed only after 11 hours. Recovery was complete on the following day. The fatal dose of DDT for man is not known. Judging from the literature, no one has ever been killed by DDT in the absence of other insecticides and/or a variety of toxic solvents. However, these common solvent formulations are highly fatal when taken in small doses, partly because of the toxicity of the solvent, and perhaps because of the increased absorbability of the DDT; several fatal cases in man have been reported. Acute oral toxicity for man = 250 mg/kg. Acute oral LD_{50} (rat) = 113 mg/kg (tech grade). Federal fruit and vegetable tolerance = 7 ppm.

Dangerous Chronic Dose in Man: Even less is known of the hazard of chronic DDT poisoning. It is known that certain exper animals fed diets containing one part of DDT per million store the compound in their fat. The storage of DDT in man has been mentioned above. The exact significance of these findings is not known and their further investigation is of the greatest importance. Human volunteers have ingested up to 35 mg/day for 21 months with no ill effects.

Signs and Symptoms of Poisoning in Man: In patients who ate substantial doses of DDT in flour, the symptoms observed were vomiting, numbness and partial paralysis of the extremities, mild convulsions, loss of proprioception and vibratory sensation of the extremities, and hyperactive knee jerk reflexes. Symptoms appeared in 30 to 60 min after eating the DDT. The paralysis and numbness were most evident in the most distal portions of the extremities, and their intensity was directly proportional to the amount of DDT ingested. All the patients were apprehensive and excited; respiration was moderately rapid; pulse remained slow to normal. The immediate protective mechanism in man, following substantial doses, is vomiting. With smaller doses, nausea and vomiting are less prominent, but diarrhea has been observed. Signs and symptoms of chronic poisoning in man are unknown, although, judging from the observed microscopic changes in exper animals, liver and kidney dysfunctions should be looked for. The primary irr of DDT is practically nil, and it has little or no tendency to produce allergy. Dermatitis induced by DDT has occasionally been reported, but these reports are unconfirmed; nevertheless the phenomenon should be expected to occur in rare instances.

Laboratory Findings: Laboratory findings are essentially negative except for the presence of DDT which may be quantitatively measured in stomach contents, urine, or tissues.

Treatment of Poisoning: Depending on the condition of the patient, attention should first be given to the sedation or to the removal of poison which may have been taken internally. Stomach lavage and saline laxatives may be used. Oil laxatives should be avoided; they promote absorption of DDT and of many organic solvents. The five drugs of choice, arranged roughly in order of their effectiveness, are phenobarbital, pentobarbital, paraldehyde, urethane, and calcium gluconate. Phenobarbital, which has been used in doses up to 0.7 g per day in epilepsy, and pentobarbital (0.25 to 0.5 g) are the barbiturates known to control convulsions of central origin. Paraldehyde (average dosage 15 cc orally, 1 cc undiluted intravenously, 35 cc rectally in normal saline) controls the convulsions of DDT-poisoned animals. Urethane (human dosage 1 to 4 g) has proved very effective in rats, but it should be remembered that the hypnotic and narcotic effects of urethane are not correspondingly high in man. Urethane has an added advantage, however, of being tolerated in the young and the aged. The object of sedation is not to induce sleep but to restore a relative calm; however, the proper dosage in the presence of poisoning may be so large that it would induce anesthesia if poisoning were not present.

Calcium gluconate has been used less than the other antidotes, but it is reported to control DDT-induced convulsions in several animals. Since its mechanism

FOX TESTING *Laboratories, Inc.*

AGRICULTURAL & INDUSTRIAL CHEMISTS

Limits of Detection

op' DDT	0.005 ppm
pp' DDT	0.005 ppm
op' DDD	0.003 ppm
pp' DDD	0.003 ppm
op' DDE	0.003 ppm
pp' DDE	0.003 ppm
Diazanone	0.005 ppm
Dieldrin	0.003 ppm
Endrin	0.003 ppm

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CERTIFICATE OF ANALYSIS

11/16/89

O USDA-ARS, Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 10/12/89

IDENTIFICATION MARKS Sample #2 0-12 inches

Antimony	0.02 mg/L
Arsenic	less than 0.005 mg/L
Berrullium	less than 0.01 mg/L
Cadmium	less than 0.01 mg/L
Chromium	less than 0.05 mg/L
Copper	0.07 mg/L
Lead	0.08 mg/L
Mercury	less than 0.001 mg/L
Nickel	less than 0.1 mg/L
Selenium	less than 0.005 mg/L
Silver	less than 0.01 mg/L
Thallium	less than 0.5 mg/L
Zinc	0.13 mg/L

Volatile and Semivolatile Organics

Acetone	86 ppb
Naphthalene	55 ppb
Dimethylphthalate	319 ppb
Di-n-butylphthalate	1164 ppb

Pesticides and Herbicides

44 DDE	0.110 ppm
Endrin	0.173 ppm
44 DDD	0.183 ppm
44 DDT	9.15 ppm

Fee $_____

Lab. No. 111799 Sample By Lab Personnel FOX TESTING *Laboratories, Inc.*

FORM PLI-200-5M-6-79

FOX TESTING *Laboratories, Inc.*

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CERTIFICATE OF ANALYSIS

11/16/89

TO USDA-Ars, Southern Plains Area
1812 Welsh Street, Suite 130
College Station, Texas 77840

SAMPLE OF Soil

RECEIVED 10/12/89

IDENTIFICATION MARKS Sample 1, 0-12 inches

Antimony	0.02 mg/L
Arsenic	less than 0.005 mg/L
Berullium	less than 0.01 mg/L
Cadmium	less than 0.01 mg/L
Chromium	less than 0.05 mg/L
Copper	0.02 mg/L
Lead	0.06 mg/L
Mercury	less than 0.001 mg/L
Nickel	less than 0.1 mg/L
Selenium	less than 0.005 mg/L
Silver	less than 0.01 mg/L
Thallium	less than 0.5 mg/L
Zinc	0.10 mg/L

Volatile and Semivolatile Organic

Acetone	43 ppb
Phenol	284 ppb
Hexachloroethane	2100 ppb
Naphthalene	91 ppb
Dimehtylphthalate	66 ppb
Diethylphthalate	204 ppb

Pesticides and Herbicides

44 DDE	0.088 ppm
44 DDD	0.011 ppm
44 DDT	0.055 ppm

Fee $_____

Lab. No. 111797 Sample By Lab Personnel **FOX TESTING** *Laboratories, Inc.*

FORM PLI-200 - 5M - 6-79

of action is entirely different, it may be used in addition to sedatives. Epinephrine is contraindicated.
For further information see Vol. 1, No. 3 of *DPIM Report.*

DEACETYLCEPHALOTHIN SODIUM SALT

NIOSH #: XI 0383500
mf: $C_{14}H_{13}N_2O_5S_2 \cdot Na$; mw: 376.40

SYN: DESACETYLCEPHALOTHIN SODIUM

TOXICITY DATA:	1	CODEN:
ipr-rat LD50:8877 mg/kg		JJANAX 28,81,75
ivn-rat LD50:6116 mg/kg		JJANAX 28,81,75
ipr-mus LD50:8754 mg/kg		JJANAX 28,81,75
ivn-mus LD50:6600 mg/kg		JJANAX 28,81,75

THR: LOW ipr, ivn.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

DEACETYL-HT-2 TOXIN

CAS RN: 34114-98-2 NIOSH #: YD 0105000
mf: $C_{19}H_{30}O_7$; mw: 370.49

SYNS:
12,13-EPOXY-3-ALPHA,4-BETA,8-ALPHA,15-TETRAHYDROXY TRICHOTHEC-9-ENE-8-ISOVALERATE
3-ALPHA,4-BETA,15-TRIHYDROXY-8-ALPHA (3-METHYLBUTYRYLOXY)-12,13-EPOXY-TRICHOTHEC-9-ENE

TOXICITY DATA:	3	CODEN:
orl-ckn LD50:30180 ug/kg		AEMIDF 35,636,78

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

DEACETYLMULDAMINE

CAS RN: 36069462 NIOSH #: QG 1360000
mf: $C_{27}H_{46}NO_2$; mw: 416.74

TOXICITY DATA:	3	CODEN:
orl-ham TDLo:150 mg/kg (7D preg)		JAFCAU 26,561,78

THR: HIGH orl.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

2-DEAMINOACTINOMYCIN D

CAS RN: 10118328 NIOSH #: AU 1595000
mf: $C_{62}H_{85}N_{11}O_{16}$; mw: 1240.0

TOXICITY DATA:	CODEN:
dnd-mam:lym 5200 nmol/L	JMCMAR 20,1055,77

THR: MUT data.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

7-DEAZAINOSINE

CAS RN: 2862160 NIOSH #: UY 9450000
mf: $C_{11}H_{13}N_3O_5$; mw: 267.27

TOXICITY DATA:	3	CODEN:
orl-rat LD50:26 mg/kg		CNREA8 29,116,69
ipr-rat LD50:25 mg/kg		CNREA8 29,116,69
scu-rat LD50:24 mg/kg		CNREA8 29,116,69
ipr-mus LD50:30 mg/kg		CNREA8 29,116,69
orl-dog LDLo:48 mg/kg		CNREA8 29,116,69
ivn-dog LDLo:48 mg/kg		CNREA8 29,116,69

THR: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

DECABORANE(14)

CAS RN: 17702419 NIOSH #: HD 1400000
mf: $B_{10}H_{14}$; mw: 122.24

Colorless needles. mp: 99.7°, d: 0.94. (solid), d: 0.78 (liquid @ 100°), vap. press: 19 mm @ 100°.

SYN:
DECABORANE (DOT) BORON HYDRIDE

TOXICITY DATA:	3-2	CODEN:
orl-rat LD50:64 mg/kg		MLSR** No.8,51
ihl-rat LC50:46 ppm/4H		AMIHAB 17,362,58
skn-rat LD50:740 mg/kg		AMIHAB 11,132,55
ipr-rat LD50:23 mg/kg		AMIHBC 8,335,53
orl-mus LD50:40 mg/kg		AMIHAB 11,132,55
ihl-mus LC50:12 ppm/4H		NTIS** AD224-006
ipr-mus LD50:32 mg/kg		AMIHAB 11,132,55
ipr-dog LDLo:10 mg/kg		AMRL** TR-65-49
skn-rbt LD50:71 mg/kg		AMIHAB 11,132,55
ipr-rbt LD50:28 mg/kg		AMIHBC 8,335,53

TLV: Air: 0.05 ppm DTLVS* 4,118,80. OSHA Standard: Air: TWA 300 ug/m3 (skin) (SCP-Q) FEREAC 39,23540,74. DOT: Flammable Solid, Label: Flammable Solid and Poison FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80. AIHQA5 16,280,55.
THR: HIGH orl, ihl, ipr, skn. MOD skn. See also boron compounds and boron hydrides. Self-ignites in O_2.
Disaster Hazard: When heated to decomp it emits tox fumes of B oxides.
Incomp: ethers, halocarbons; O_2 @ 100°; dimethyl sulfoxide.
For further information see Vol. 1, No. 8 of *DPIM Report.*

1,1a,3,3a,4,5,5a,5b,6-DECACHLOROOCTAHYDRO-2-HYDROXY-1,3,4-METHENO-1H-CYCLOBUTA(c,d)-PENTALENE-2-LEVULINIC ACID, ETHYL ESTER

CAS RN: 4234791 NIOSH #: PC 8400000
mf: $C_{17}H_{12}Cl_{10}O_4$; mw: 634.79

SYNS:
GC-9160 KELEVAN

TOXICITY DATA:	3	CODEN:
orl-rat LD50:255 mg/kg		BESAAT 15,96,69
orl-dog LD50:400 mg/kg		BESAAT 15,96,69
skn-rbt LD50:188 mg/kg		BESAAT 15,96,69

Toxicology Review: RREVAH 63,45,76.

RECORD OF COMMUNICATION

PROJECT NUMBER: 33-90290

☐ PHONE ☒ INTERVIEW PROJECT NAME: USDA ARS BROWNSVILLE

NAME: Jim Raulston COMPANY: USDA ARS ADDRESS: PHONE:	CURA CONTACT NAME: Victor Cason 214-620-7117	DATE: 4/2/90 TIME: 2:30 p.m.

SUBJECT: BROWNSVILLE SITE

SUMMARY: MOST WASTE LAB CHEMICALS WERE DISPOSED OF DOWN THE SINK. SOME PESTICIDES WERE PLACED IN A 20'X20' PIT ABOUT 3 FEET DEEP BEHIND THE WAREHOUSE. MR RAULSTON KNEW OF NO ACCIDENTAL SPILLS ONSITE. Victor Cason

ACTIONS:

COPIES TO:

RECORD OF COMMUNICATION

PROJECT NUMBER: 30-90794

☑ PHONE ☐ INTERVIEW PROJECT NAME: BROWNSVILLE USDA

NAME: Ed Stein COMPANY: USDA ARS ADDRESS: Brownsville PHONE:	CURA CONTACT NAME: Victor Cason 214-620-7117	DATE: 6/14/90 TIME: 11:30

SUBJECT: Elevated contamination near building at site.

SUMMARY: Ed stated that he thought there had been a sink near the sample location. This could help explain the elevated level of DDT, ie 159 ppm. ~~on off~~ with regards to the other buildings. Victor Cason

ACTIONS:

COPIES TO:

RECORD OF COMMUNICATION

PROJECT NUMBER: 33-90290

☒ PHONE ☐ INTERVIEW PROJECT NAME: USDA ARS Brownsville

NAME: Richard Ocañas COMPANY: City of Brownsville Water Dept ADDRESS: PHONE: 512/544-3800	CURA CONTACT NAME: Victor Cason 214-620-7117	DATE: 5/29/90 TIME: 11:25

SUBJECT: Water source(s), use of groundwater, location of intakes,

SUMMARY: Mr. Ocañas stated that he knew of no drinking water wells in or around Brownsville. The shallow ground water is not potable. Mr Ocañas stated that ~~some~~ wells are used for irrigation. The city water supply is from the Rio Grande River and the intake is approximately 2.5 miles northwest of the site adjacent to Morales Banco. The depth to groundwater is about 12 feet. Victor Cason

ACTIONS:

COPIES TO:

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road • Austin, Texas 78744 • 512-389-4800

CHARLES D. TRAVIS
Executive Director

REF. 9

May 30, 1990

Mr. C. Victor Cason
Environmental Scientist II
CURA Inc.
2209 Wisconsin Street, Suite 400
Dallas, Texas 75229

Dear Mr. Cason:

In response to your May 17, 1990 request for information on sensitive species and natural communities within or near the four project areas near Kerrville, Bushland, Weslaco, and Brownsville, we offer the following comments. A search of the Texas Natural Heritage Program Information System revealed occurrences of special species and natural communities in the general vicinity of the projects. Following is a list of these species and natural communities occurring on or very near the requested quadrangles. Even though some occurrences did not fall within your one-mile radius, they are known from the surrounding area and would therefore be potential in your project area.

KERRVILLE SITE - Legion and Kerrville quads.

Federal and State Endangered--

Ancistrocactus tobuschii (Tobusch fishhook cactus) G2 S2 - gravel terraces along drainages, limestone ledges, ridges, and rocky hills in openings of live oak-juniper woodland

Federal Endangered and State Threatened--

Dendroica chrysoparia (Golden-cheeked Warbler) G2 S2

Federal Category 2--

Amorpha roemerana (Texas amorpha) G3 S3

Argythamnia aphoroides (Hill Country wild mercury) G2 S2

Eurycea neotenes (Texas Salamander) G3 S3 - spring dweller in the Edwards Plateau region

Micropterus treculi (Guadalupe Bass) G3 S3 - endemic to eastern Edwards Plateau streams

Salvia penstemonoides (big red sage) G1 S1

Managed Areas--

El Coto de los Rincones
Kerrville State Recreation Area

BUSHLAND - Bushland quad.

No presently mapped occurrences

WESLACO - Mercedes and Progresso quads.
Federal Catetory 2 and State Endangered--
Notophthalmus meridionalis (Black-spotted Newt) G1 S1
Siren intermedia texana (Rio Grande Lesser Siren) G5T2 S2 - Both the Siren and the Newt can be found in wet or sometimes wet areas; such as arroyos, canals, ditches, and even shallow depressions. The Newt aestivates in the ground during dry periods; whereas the Siren requires some moisture to remain.
Federal Category 2--
Justicia runyonii (Runyon's water-willow) G2 S2
Other Rare Species--
Sabal mexicana (Texas palmetto) G2 S1
Natural Communities--
Texas Ebony-Anacua Series G2 S1

BROWNSVILLE - East Brownsville and West Brownsville quads.
Federal and State Endangered--
Felis yagouaroundi (Jaguarundi) G4 S1
Federal Catetory 2 and State Endangered--
Notophthalmus meridionalis (Black-spotted Newt) G1 S1
Siren intermedia texana (Rio Grande Lesser Siren) G5T2 S2 - Both the Siren and the Newt can be found in wet or sometimes wet areas; such as arroyos, canals, ditches, and even shallow depressions. The Newt aestivates in the ground during dry periods; whereas the Siren requires some moisture to remain.
State Threatened--
Hypopachus variolosus (Sheep Frog) G5 S2
Federal Category 2--
Anthericum chandleri (lila de los llanos) G2 S2
Ayenia limitaris (Texas ayenia) G2 S1
Justicia runyonii (Runyon's water-willow) G2 S2
Other Rare Species--
Adelia vaseyi (Vasey's adelia) G2 S2
Coniophanes imperialis (Black-striped Snake) G3? S2
Coryphantha macromeris var. runyonii (Runyon's cory cactus) G3T2 S2
Grindelia oolepis (plains gumweed) G2 S2
Sabal mexicana (Texas palmetto) G2 S1
Natural Communities--
Texas Ebony-Anacua Series G2 S1
Managed Areas--
Lower Rio Grande Valley National Wildlife Refuge

The Heritage Program information included here is based on the best data currently available to the state regarding threatened, endangered, or otherwise sensitive species. However, these data do not provide a definite statement as to the presence or absence of special species or natural communities within your project area, nor can these data substitute for an evaluation by qualified biologists. This information is intended to assist you in avoiding harm to species that occur on your site.

This letter does not constitute an assessment of fish and wildlife impacts that might result from the activity for which this information is provided. Should you need an impact assessment from the Texas Parks and Wildlife Department, contact the Environmental Assessment Branch of the Resource Protection Division, attention Mr. Bob Spain, or contact him at 512/389-4725. All requests for assessments must be in writing.

Please contact the Texas Parks and Wildlife Department's Heritage Program before publishing or otherwise disseminating any specific locality information. Thank you for contacting us. Please feel free to call me at 512/389-4533 if you have questions.

Sincerely,

Dorinda Sullivan

Dorinda Sullivan, Data Manager
Texas Natural Heritage Program
Resource Protection Division

DLS:ds

PRESCORE ANALYSIS HRS SCORESHEET

USDA-ARS
Cotton Insects Research Laboratory
Brownsville, Cameron County, Texas

POTENTIAL RELEASES

- [x] Groundwater
- [x] Surface Water
- [ ] Air
- [ ] On-site/direct contact

SCORING SCENARIOS		Preliminary	Projected
GROUNDWATER ROUTE SCORE (Sgw)	=	1.49	13.82
SURFACE WATER ROUTE SCORE (Sw)	=	0	8.95
AIR ROUTE SCORE (Sa)	=	0	0
TOTAL SCORE (Sm)	=	0.86	9.51

AIR ROUTE WORKSHEET

		Preliminary	Reference	Projected	Reference
1	OBSERVED RELEASE	0		0	
	DATE AND LOCATION:				
2	WASTE CHARACTERISTICS:				
	REACTIVITY AND INCOMPATIBILITY				
	TOXICITY (x3)				
	HAZARDOUS WASTE QUANTITY				
	WASTE CHARACT. SCORE =				
3	TARGETS:				
	POP. WITHIN 4 MILES				
	DISTANCE TO SENSITIVE ENVIRONMENT (x2)				
	LAND USE				
	TOTAL TARGETS SCORE =				
	(1x2x3) 35,100				
	AIR ROUTE SCORE =	0		0	

SURFACE WATER ROUTE WORKSHEET

	Preliminary	Reference	Projected	Reference
1 OBSERVED RELEASE	0		0	
2 ROUTE CHARACTERISTICS				
FACILITY SLOPE AND INTERVENING TERRAIN	0	7	0	7
1-yr., 24-hr. RAINFALL	3	6	3	6
DISTANCE TO NEAREST SURFACE WATER (x2)	6	7	6	7
PHYSICAL STATE	3	4	3	4
ROUTE CHARACT. SCORE =	12		12	
3 CONTAINMENT	3	Note 3	3	Note 3
4 WASTE CHARACTERISTICS:				
TOXICITY/PERSISTENCE	18	5, 6	18	5, 6
HAZ. WASTE QUANTITY	1	Note 4	2	Note 4
WASTE CHARACT. SCORE =	19		20	
5 TARGETS:				
SURFACE WATER USE (x3)	0	Note 6	6	Note 6
DISTANCE TO A SENSITIVE ENVIRONMENT (x2)	0	8, Note 7	2	8, Note 7
POPULATION SERVED/DISTANCE TO DOWNSTREAM WATER INTAKE	0	1	0	1
TOTAL TARGETS SCORE =	0		8	
(1x4x5) or (2x3x4x5)	0		5,760	
SURFACE WATER ROUTE SCORE =	0		8.95	

GROUND WATER ROUTE WORKSHEET

		Preliminary	Reference	Projected	Reference
	OBSERVED RELEASE	0		0	
2	ROUTE CHARACTERISTICS				
	DEPTH TO AQUIFER OF CONCERN (x2)	0	1	6	1, Note 1
	NET PRECIPITATION	0	2	0	2
	PERMEABILITY OF UNSATURATED ZONE	2	3	3	3, Note 2
	PHYSICAL STATE	3	4	3	4
	ROUTE CHARACT. SCORE =	5		12	
3	CONTAINMENT	3	Note 3	3	Note 3
4	WASTE CHARACTERISTICS				
	TOXICITY/PERSISTENCE	18	5, 6	18	5, 6
	HAZARDOUS WASTE QUANTITY	1	Note 4	2	Note 4
	WASTE CHARACT. SCORE =	19		20	
5	TARGETS:				
	GROUNDWATER USE (x3)	3	1	3	1
	DISTANCE TO NEAREST WELL /POPULATION SERVED	0	Note 5	8	Note 5
	TOTAL TARGETS SCORE =	3		11	
	(1x4x5) or (2x3x4x5)	855		7,920	
	GROUNDWATER ROUTE SCORE =	1.49		13.82	

Preliminary S_M WORKSHEET

	S	S^2
Groundwater Route Score (Sgw)	1.49	2.22
Surface Water Route Score (Ssw)	0	0
Air Route Score (Sa)	0	0
$Sgw^2 + Ssw^2 + Sa^2$		2.22
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2}$		1.49
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2} / 1.73 = S_m =$		0.86

Projected S_M WORKSHEET

	S	S^2
Groundwater Route Score (Sgw)	13.82	190.99
Surface Water Route Score (Ssw)	8.95	80.10
Air Route Score (Sa)	0	0
$Sgw^2 + Ssw^2 + Sa^2$		271.09
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2}$		16.46
$(Sgw^2 + Ssw^2 + Sa^2)^{1/2} / 1.73 = S_m =$		9.51

Attachment to HRS Prescore
USDA ARS Brownsville, TX Site

1. The shallow aquifer is used for irrigation. However, it is not known if there is a well within a three mile radius of the site.

2. The soils onsite are described as silty loams and sandy loams which exhibit moderate permeability. However, the description only extends to five feet. The geology between five feet and twelve feet is not known. The projected score is based on the assumption that the soils between five feet and the water table have a high permeability.

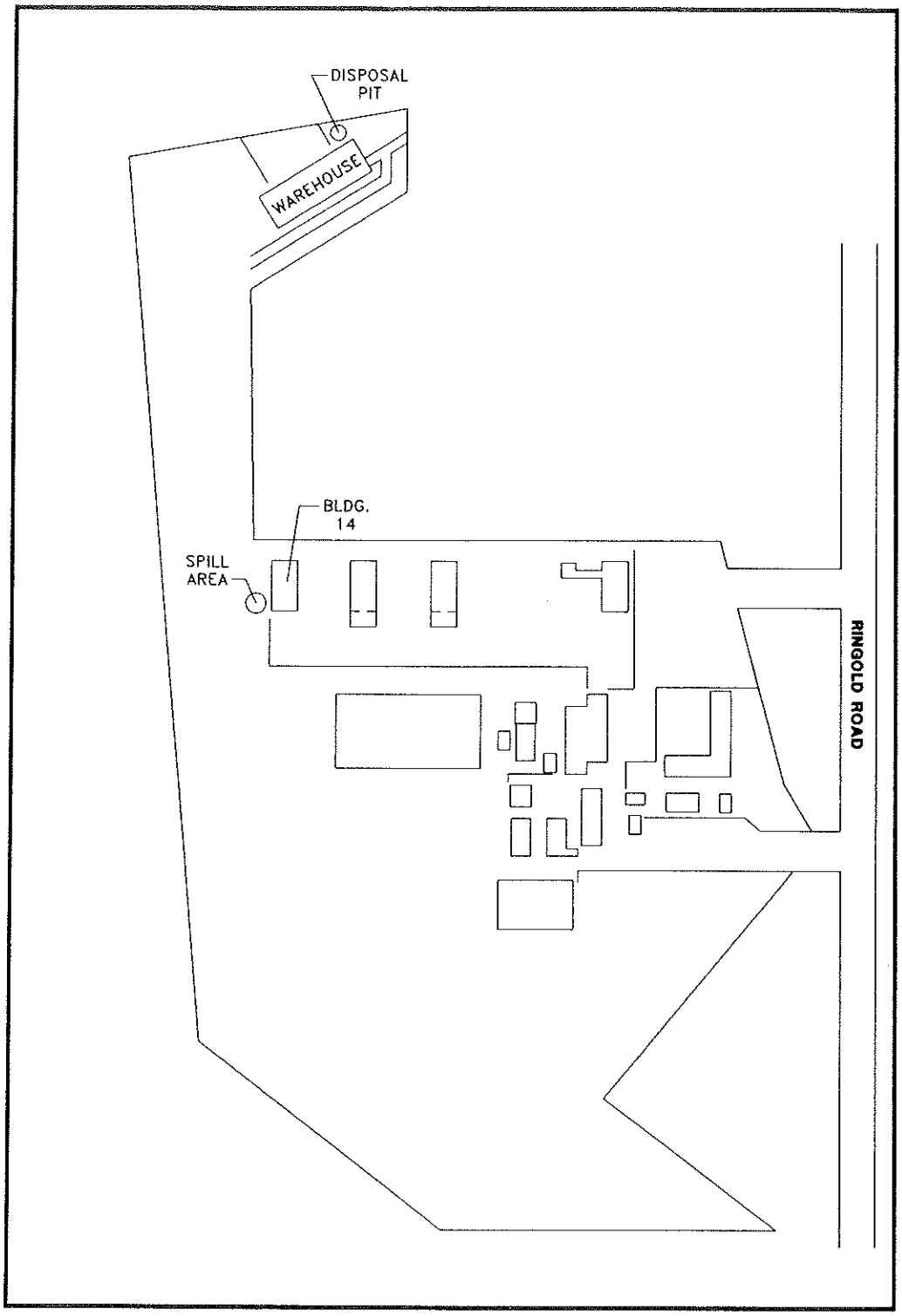
3. The disposal pit adjacent to the warehouse has no liner and no runon control.

4. With contamination at both locations, spill area and disposal pit, there is at least one cubic yard of waste. The Preliminary Score is one based on the sample results which indicate contamination. Assuming that the spill area is one yard square and one half foot deep and that the disposal pit is twenty feet square and three feet deep, a waste quantity of forty-five cubic yards was calculated.

5. The location of the nearest well is not known. Therefore, the Preliminary Score is zero. For the Projected Score the following assumptions were made: the nearest well is within one mile and serves less than 100 people.

6. Several hotels are next to the Fort Brown Resaca, a small lake. During the site visit no one was observed fishing or boating on the lake. Therefore, the Preliminary Score is zero. However, several boats were observed on the lake and it is presumed that the lake is used for recreational purposes.

7. It is not known if any endangered species actually exist within a one mile radius of the site. For the Projected Score, it was assumed that one of the species listed is present within a one mile radius.



SITE PLAN MAP

CURA INC. 2209 WISCONSIN, #400 – DALLAS, TEXAS 214 620-7117	USDA-ARS COTTON INSECTS RESEARCH LABORATORY BROWNSVILLE, TEXAS	DATE: JULY 1990	SCALE: NTS
		PROJECT NO. 33-90290	FIGURE NO. 2

REFERENCES

1. ROC To: Richard Ocanas, City of Brownsville Water Department. FROM: Victor Cason, CURA, Inc., May 29, 1990. RE: Water source(s), uses of groundwater, and location of intakes.

2. Climatic Atlas of the United States, U.S. Department of Commerce, June 1968.

3. Williams, DeWayne, et al. Soil Survey of Cameron County, Texas, U.S. Department of Agriculture, Soil Conservation Service, U.S. Government Printing Office, Washington, D.C. May 1977.

4. Analytical results from samples collected at spill location and the disposal pit onsite.

5. Say, N. Irving. Dangerous Properties of Industrial Materials, Sixth Edition. Van Nostrand Reinhold Company, New York, 1984.

6. Uncontrolled Hazardous Waste Site Ranking System, A Users Manual. Federal Register July 16, 1982.

7. USGS East Brownsville Quadrangle, Texas, 7.5 Minute Series Topographic Map, 1955, photorevised 1983.

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY

New York

SYNS:
BAYER 38819 GOPHACIDE

TOXICITY DATA: 3

	CODEN:
orl-rat LD50:3700 ug/kg	FMCHA2 -,D153,80
skn-rat LD50:25 mg/kg	FMCHA2 -,D153,80
ipr-rat LD50:3500 ug/kg	AIPTAK 169,108,67
orl-mus LD50:12 mg/kg	TXAPA9 25,42,73
ipr-mus LD50:5500 ug/kg	AIPTAK 169,108,67
orl-dog LD50:23 mg/kg	PCOC** -,107,66
orl-gpg LD50:20 mg/kg	AIPTAK 169,108,67
ipr-gpg LD50:14 mg/kg	AIPTAK 169,108,67
orl-pgn LD50:15 mg/kg	TXAPA9 21,315,72
orl-bwd LD50:4 mg/kg	TXAPA9 21,315,72

THR: HIGH orl, skn, ipr.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x, PO_x, Cl^- and NO_x.

1,6-BIS(5-(p-CHLOROPHENYL)BIGUANIDINO) HEXANE

CAS RN: 55561 NIOSH #: DU 1925000
mf: $C_{22}H_{30}Cl_2N_{10}$; mw: 505.52

SYNS:
1,6-BIS(P-CHLOROPHENYLDIGUANIDO)HEXANE
1,6-DI(4'-CHLOROPHENYLDIGUANIDO)HEXANE
CHLORHEXIDIN (CZECH)
1,1'-HEXAMETHYLENEBIS(5-(P-CHLOROPHENYL)BIGUANIDE

TOXICITY DATA: 3-2

	CODEN:
skn-hmn 1500 ug/3D-I MLD	85DKA8 -,127,77
orl-rat LD50:1800 mg/kg	TXAPA9 42,1,77
ivn-rat LD50:22 mg/kg	TXAPA9 42,1,77

THR: HIGH ivn; MOD orl. MLD hmn skn irr.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

1,1-BIS(4-CHLOROPHENYL)-2,2-DICHLOROETHANE

CAS RN: 72548 NIOSH #: KI 0700000
mf: $C_{14}H_{10}Cl_4$; mw: 320.04

Crystalline solid. mp: 110°, vap. d: 11.

SYNS:
1,1-BIS(P-CHLOROPHENYL)-2,2-DICHLOROETHANE
1,1-DICHLORO-2,2-BIS(PARA-CHLOROPHENYL)ETHANE
2,2-BIS(P-CHLOROPHENYL)-1,1-DICHLOROETHANE
1,1-DICHLORO-2,2-DI(4-CHLOROPHENYL)ETHANE
2,2-BIS(4-CHLOROPHENYL)-1,1-DICHLOROETHANE
P,P'-DICHLORODIPHENYLDICHLOROETHANE
P,P'-DDD
1,1-DICLORO-2,2-BIS(4-CLORO-FENIL)-ETANO (ITALIAN)
1,1-DICHLOOR-2,2-BIS(4-CHLOOR FENYL)-ETHAAN (DUTCH)
ENT 4,225
1,1-DICHLOR-2,2-BIS(4-CHLORPHENYL)-AETHAN (GERMAN)
NCI-C00475
1,1-DICHLORO-2,2-BIS(P-CHLOROPHENYL)ETHANE
TETRACHLORODIPHENYLETHANE
1,1-DICHLORO-2,2-BIS(4-CHLOROPHENYL)-ETHANE (FRENCH)

TOXICITY DATA: 3

	CODEN:
cyt-rat:oth 10 ug/L	34LXAP -,555,76
hma-mus/srm 1500 mg/kg	BIZNAT 91,311,72
orl-rat TDLo:54 gm/kg/78W-C:ETA	NCITR* NCI-CG-TR-131,78
orl-mus TDLo:39 gm/kg/2Y-C:NEO	JNCIAM 52,883,74
orl-hmn LDLo:5000 mg/kg	12VXA5 8,351,68
orl-rat LD50:113 mg/kg	GUCHAZ 6,154,73
orl-mus LDLo:600 mg/kg	JPETAB 88,400,46
skn-rbt LD50:1200 mg/kg	AFDOAQ 16,3,52

Carcinogenic Determination: Animal Positive IARC** 5,83,74. *Toxicology Review:* 27ZTAP 3,49,69. NCI Carcinogenesis Bioassay Completed; Results Indefinite: Rat (NCITR* NCI-CG-TR-131,78). NCI Carcinogenesis Bioassay Completed; Results Negative: Mouse (NCITR* NCI-CG-TR-131,78).
THR: MUT data. Exper ETA, NEO, CARC. HIGH orl. MOD skn. See also DDT.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

2,2-BIS(p-CHLOROPHENYL)-1,1-DICHLOROETHYLENE

CAS RN: 72559 NIOSH #: KV 9450000
mf: $C_{14}H_8Cl_4$; mw: 318.02

SYNS:
1,1-DICHLORO-2,2-BIS(P-CHLOROPHENYL)ETHYLENE
1,1'-DICHLOROETHENYLIDENE) BIS(4-CHLOROBENZENE)
P,P'-DICHLORODIPHENYL DICHLOROETHYLENE
NCI-C00555

TOXICITY DATA: 3

	CODEN:
cyt-rat:oth 10 ug/L	34LXAP -,555,76
msc-mus:lym 40 mg/L/4H	MUREAV 59,61,79
orl-mus TDLo:9700 mg/kg/78W-C:CAR	NCITR* NCI-CG-TR-131,78
orl-mus TD:28 gm/kg/80W-C:NEO	JNCIAM 52,883,74
orl-mus TD:17 gm/kg/78W-C:CAR	NCITR* NCI-CG-TR-131,79
orl-rat LD50:880 mg/kg	TXAPA9 14,515,69
orl-mus LDLo:200 mg/kg	JPETAB 88,400,46

Toxicology Review: RREVAH 48,141,73. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-131,79). NCI Carcinogenesis Bioassay Completed; Results Negative: Rat (NCITR* NCI-CG-TR-131,78).
THR: An exper CARC, NEO. MOD orl. MUT data.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-.

1,1-BIS(p-CHLOROPHENYL)METHYL CARBINOL

CAS RN: 80068 NIOSH #: DC 7875000
mf: $C_{14}H_{12}Cl_2O$; mw: 267.16

SYNS:
1,1-BIS(P-CHLOROPHENYL)ETHANOL
4,4'-DICHLORO-(METHYL BENZHYDROL)
1,1-BIS(4-CHLOROPHENYL)ETHANOL
4,4'-DICHLORO-ALPHA-METHYLBENZOHYDROL
1,1-BIS(p-CHLOROPHENYL) METHYLCARBINOL
DI-(P-CHLOROPHENYL)-ETHANOL
DICHLORODIPHENYLETHANOL
DI(P-CHLOROPHENYL) METHYLCARBINOL
P,P'-DICHLORODIPHENYLMETHYLCARBINOL
ENT 9,624

TOXICITY DATA: 2

	CODEN:
orl-rat LD50:500 mg/kg	ARSIM* 20,8,66
ipr-rat LD50:725 mg/kg	OYYAA2 2,148,68

TOXICITY DATA: 2	CODEN:
ihl-rat LCLo:520 mg/m3/4H	HYSAAV 31,383,66
unk-rat LDLo:452 mg/kg	HYSAAV 31,383,66
unk-mus LDLo:580 mg/kg	HYSAAV 31,383,66

THR: MOD ihl, unk. See also esters.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

DDT

CAS RN: 50293 NIOSH #: KJ 3325000
mf: $C_{14}H_9Cl_5$; mw: 354.48

Colorless crystals or white to slightly off-white powder. Odorless or with slight aromatic odor. mp: 108.5°-109°.

SYNS:

ALPHA,ALPHA-BIS(P-CHLORO-PHENYL)-BETA,BETA,BETA-TRICHLORETHANE	ENT 1,506
	NCI-C00464
2,2-BIS(P-CHLOROPHENYL)-1,1,1-TRICHLOROETHANE	1,1,1-TRICHLOOR-2,2-BIS(4-CHLOOR FENYL)-ETHAAN (DUTCH)
CHLOROPHENOTHANE	1,1,1-TRICHLOR-2,2-BIS(4-CHLOR-PHENYL)-AETHAN (GERMAN)
P,P'-DDT	
P,P'-DICHLORODIPHENYLTRI-CHLOROETHANE	1,1,1-TRICHLORO-2,2-DI(4-CHLO-ROPHENYL)-ETHANE
4,4'-DICHLORODIPHENYLTRI-CHLOROETHANE	1,1,1-TRICLORO-2,2-BIS(4-CLORO-FENIL)-ETANO (ITAL-IAN)
DIPHENYLTRICHLOROETHANE	

TOXICITY DATA: 3	CODEN:
cyt-hmn:lym 200 ug/1/72H	MUREAV 40,131,76
dlt-rat-orl 100 mg/kg	FCTXAV 11,53,73
spm-rat-orl 1 gm/kg/2D-I	BECTA6 14,171,75
cyt-mus-ipr 50 ppm	CNJGA8 16,491,74
cyt-mus-unk 50 mg/kg	PHTHDT 6,147,79
dlt-mus-orl 100 mg/kg	PHTHDT 6,147,79
dlt-mus-unk 200 mg/kg/10W-I	PHTHDT 6,147,79
orl-rat TDLo:19 gm/kg/2Y-C:NEO	IJCNAW 19,179,77
orl-mus TDLo:73 mg/kg/26W-C:CAR	FCTXAV 7,215,69
scu-mus TDLo:370 mg/kg/80W-I:NEO	IJCNAW 19,725,77
orl-mus TD:11 gm/kg/78W-C:ETA	NCITR* NCI-CG-TR-131,78
orl-mus TD:7560 mg/kg/90W-C:NEO	FCTXAV 11,433,73
orl-mus TD:5600 mg/kg/80W-I:NEO	IJCNAW 19,725,77
orl-rat TD:8100 mg/kg/2Y-C:ETA	TXAPA9 11,88,67
orl-inf LDLo:150 mg/kg	BMJOAE 2,845,45
orl-hmn TDLo:6 mg/kg:CNS	DTLVS* 3,68,71
unk-man LDLo:221 mg/kg	85DCAI 2,73,70
orl-rat LD50:113 mg/kg	TXAPA9 2,88,60
skn-rat LD50:1931 mg/kg	SPEADM 74-1,-,74
ipr-rat LD50:74 mg/kg	ANTBAL 14,316,69
scu-rat LD50:1500 mg/kg	BMJOAE 1,865,45
ivn-rat LDLo:30 mg/kg	JPETAB 86,213,46
ivn-rat LD50:68 mg/kg	ANTBAL 14,316,69
orl-mus LD50:135 mg/kg	FEPRA7 12,368,53
ipr-mus LD50:77 mg/kg	ANTBAL 14,316,69
ivn-mus LD50:68500 ug/kg	ANTBAL 14,316,69
orl-dog LDLo:300 mg/kg	MEMOAQ 4,25,50
ivn-dog LDLo:75 mg/kg	JPETAB 86,213,46
orl-mky LD50:200 mg/kg	AVPCAQ 12,31,75
ivn-mky LDLo:50 mg/kg	JPETAB 86,213,46
orl-cat LDLo:250 mg/kg	JPETAB 86,213,46
ivn-cat LDLo:40 mg/kg	JPETAB 86,213,46
orl-rbt LD50:250 mg/kg	PCOC** -,347,66
skn-rbt LD50:300 mg/kg	BMJOAE 1,865,45
scu-rbt LD50:250 mg/kg	BMJOAE 1,865,45
ivn-rbt LDLo:50 mg/kg	JPETAB 86,213,46
orl-gpg LD50:150 mg/kg	JETOAS 7,159,74
skn-gpg LD50:1000 mg/kg	BMJOAE 1,865,45
scu-gpg LD50:900 mg/kg	BMJOAE 1,865,45
orl-ckn LDLo:300 mg/kg	MEMOAQ 4,25,50
orl-frg LD50:7600 ug/kg	ENVPAF 20,45,79
scu-frg LD50:35 mg/kg	AIPTAK 74,343,47
orl-dom LDLo:300 mg/kg	MEMOAQ 4,25,50
dlt-oln-orl 200 ppm	ETEAAT 12,221,69
cyt-hmn:lym 200 ug/L/72H	MUREAV 40,131,76
cyt-rat:oth 10 ug/L	34LXAP -,555,76
orl-rat TDLo:390 mg/kg (1-20D preg)	GISAAA 45(6),14,80
ipr-rat TDLo:60 mg/kg (3D pre)	TXAPA9 18,348,71
scu-mus TDLo:418 mg/kg (6-14D preg)	NTIS** PB223-160
unk-mus TDLo:3 mg/kg (10-17D preg)	TXAPA9 22,327,72
orl-dog TDLo:3540 mg/kg (MGN)	AECTCV 6,83,77
orl-rbt TDLo:150 mg/kg (7-9D preg)	AIPTAK 192,286,71
orl-mus TDLo:3408 mg/kg (MGN) TFX:NEO	IJCNAW 11,688,73

Aquatic Toxicity Rating: TLm96:under 1 ppm WQCHM* 2,-,74. Carcinogenic Determination: Animal Suspected IARC** 5,83,74. *TLV:* Air: 1 mg/m3 DTLVS* 4,117,80; *Toxicology Review:* JSIRAC 34,462,75; AABIAV 35,505,48; ATXKA8 29,1,72; ADCSAJ 1,160,50; ENVRAL 7(2),243,74; RREVAH 48,141,73; RREVAH 59,119,75; ADCSAJ 1,160,50; RREVAH 61,37,75; NOALA4 41(217),271,75; MZUZA8 (8),90,73; CNDQA8 10(3),43,75; ECMAAI 14(3),141,73; DTTIAF 80(20),485,73; RREVAH 56,107,75; AJDDAL 20,331,53; AJMEAZ 38,409,65; ETOXAC 7,1,76; IRGGAJ 24,193,68; BISNAS 20,958,70; 85CVA2 5,250,70; PTPAD4 7,513,79; CTOXAO 13,231,78; EESADV 1,89,77; EESADV 1,503,78; BNYMAM 54,413,78; 27ZTAP 3,45,69. OSHA Standard: Air: TWA 1 mg/m3 (skin) (SCP-S) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. NCI Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-131,78). "NIOSH Manual of Analytical Methods" VOL 3 S274. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: HIGH via oral and dermal routes. Used as a food additive permitted in the food and drinking water of animals and/or for the treatment of food-producing animals. Also a food additive permitted in food for human consumption. *Note:* DDT is a common air contaminant.

DDT is readily absorbed from the intestinal tract and, if it occurs in the air in the form of an aerosol or dust, it may be taken into the lung and readily absorbed. DDT is not, however, absorbed from the skin unless it is in solution. Solutions are absorbed from the skin and, by the same token, emulsions are absorbed to some extent. Likewise, fats and oils from whatever source increase the absorption of DDT from the intestine. DDT acts on the CNS, but the exact mechanism of this action either in man or in animals has not been elucidated. DDT is an exper MUT, CARC, ETA, NEO. See chlorinated hydrocarbons. Large doses of DDT also induce nausea and/or diarrhea in man; how-

19,361,73; FNSCA6 2,67,73; 27ZTAP 3,48,69. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An exper TER. In hmn it is a skn, ivn, orl, and ims toxin and an allergen. HIGH ipe, ivn, scu.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

DIAZIDE

CAS RN: 333415 NIOSH #: TF 3325000
mf: $C_{12}H_{21}N_2O_3PS$; mw: 304.38

Liquid with faint ester-like odor, miscible in organic solvents. bp: 84° @ 0.002 mm, d: 1.116 @ 20°/4°.

SYNS:

O,O-DIAETHYL-O-(2-ISOPROPYL-4-METHYL-PYRIMIDIN-6-YL)-MONOTHIOPHOSPHAT (GERMAN)
DIAZINON
O,O-DIETHYL-O-(2-ISOPROPYL-4-METHYL-PYRIMIDIN-6-YL)-MONOTHIOFOSFAAT (DUTCH)
O,O-DIETHYL-O-(2-ISOPROPYL-4-METHYL-6-PYRIMIDINYL)-PHOSPHOROTHIOATE
O,O-DIETHYL O-(2-ISOPROPYL-6-METHYL-4-PYRIMIDINYL) PHOSPHOROTHIOATE
O,O-DIETHYL-O-(2-ISOPROPYL-4-METHYL-6-PYRIMIDYL)PHOSPHOROTHIOATE
O,O-DIETHYL O-(2-ISOPROPYL-4-METHYL-6-PYRIMIDYL) THIONOPHOSPHATE
O,O-DIETHYL 2-ISOPROPYL-4-METHYLPYRIMIDYL-6-THIOPHOSPHATE
DIETHYL 4-(2-ISOPROPYL-6-METHYLPYRIMIDINYL)PHOSPHOROTHIONATE
O,O-DIETIL-O-(2-ISOPROPIL-4-METIL-PIRIMIDIN-6-IL)-MONOTIOFOSFATO(ITALIAN)
O,O-DIETHYL O-6-METHYL-2-ISOPROPYL-4-PYRIMIDINYL PHOSPHOROTHIOATE
ENT 19,507
O-2-ISOPROPYL-4-METHYLPYRIMIDYL-O,O-DIETHYL PHOSPHOROTHIOATE
ISOPROPYLMETHYLPYRIMIDYL DIETHYL THIOPHOSPHATE
NCI-C08673
THIOPHOSPHATE DE O,O-DIETHYLE ET DE O-2-ISOPROPYL-4-METHYL-6-PYRIMIDYLE (FRENCH)

TOXICITY DATA: 3-2	CODEN:
orl-mus TDLo:3960 ug/kg (1-22D preg)	JTEHD6 3,989,77
orl-mus TDLo:189 mg/kg (1-21D preg)	JEPTDQ 2,357,78
orl-mus TDLo:3780 ug/kg (1-21D preg)	JEPTDQ 2,357,78
skn-rbt 500 mg open MOD	CIGET* -,-,77
eye-rbt 100 mg SEV	CIGET* -,-,77
cyt-hmn:lym 500 ug/L	TSITAQ 18,1490,76
cyt-ham:lng 100 mg/L/27H	MUREAV 66,277,79
ipr-rat TDLo:100 mg/kg (11D preg)	AEHLAU 16,805,68
ipr-rat TDLo:150 mg/kg (11D preg)	AEHLAU 16,805,68
ipr-rat TDLo:200 mg/kg (11D preg)	AEHLAU 16,805,68
orl-hmn TDLo:214 mg/kg:CNS	CTOXAO 12,435,78
orl-rat LD50:76 mg/kg	TXAPA9 2,88,60
skn-rat LD50:455 mg/kg	TXAPA9 2,88,60
ipr-rat LD50:65 mg/kg	ARZNAD 5,436,55
orl-mus LD50:85 mg/kg	GUCHAZ 6,171,73
ipr-mus LD50:65 mg/kg	PAREAQ 11,536,59
scu-mus LD50:58 mg/kg	OIZAAV 71,6099,59
ivn-mus LD50:180 mg/kg	CSLNX* NX#00023
orl-rbt LDLo:30 mg/kg	TXAPA9 15,152,69
skn-rbt LD50:400 mg/kg	CIGET* -,-,77
orl-gpg LD50:250 mg/kg	85DPAN -,-,71/76
orl-ckn LD50:8400 ug/kg	85DPAN -,-,71/76
unk-mam LD50:76 mg/kg	30ZDA9 -,338,71
orl-bwd LD50:2 mg/kg	TXAPA9 21,318,72

TLV: Air: 0.1 mg/m3 DTLVS* 4,121,80. *Toxicology Review:* AQMOAC #73-19,1973; RREVAH 46,1,73; CNDQA8 10(3),43,75; DTTIAF 80(20),485,73; RREVAH 63,1,76; 27ZTAP 3,48,69. DOT: ORM-A, Label: None FEREAC 41,57018,76. NCI Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-137,79). Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: MUT data. A skn, eye irr. A hmn CNS. HIGH ipr, orl, scu, skn, unk. MOD skn.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x, PO_x and SO_x.

1,2-DIAZIDOCARBONYLHYDRAZINE

mf: $C_2H_2N_8O_2$; mw: 170.09

Explodes on heating or impact.

1,1-DIAZIDOETHANE

mf: $C_2H_4N_6$; mw: 112.10

Extremely unstable and explosive.

1,2-DIAZIDOETHANE

mf: $C_2H_4N_6$; mw: 112.10

Incomp: Self-explodes; sulfuric acid. Explodes on heating.

DIAZIDO ETHIDIUM

NIOSH #: SF 7962000
mf: $C_{21}H_{16}N_7 \cdot Br$; mw: 446.35

SYN: 3,8-DIAZIDO-5-ETHYL-6-PHENYLPHENANTHRIDINIUM BROMIDE

TOXICITY DATA:	CODEN:
mmo-smc 6 umol/L/10M	MUREAV 56,21,77

THR: MUT data.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and Br^-.

DIAZIDOMALONONITRILE

mf: C_3N_8; mw: 148.06

Crystallized material will explode.

DIAZIDOMETHYLENEAZINE

mf: C_2N_{14}; mw: 220.12

Very explosive.

DIAZIDOMETHYLENECYANAMIDE

mf: C_2N_8; mw: 136.08

Explosive solid.

1,3-DIAZIDOPROPENE

mf: $C_3H_4N_6$; mw: 124.11

THR: Very unstable and may explode.

THR: HIGH ivn; MOD orl.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

3,4-DIDEHYDRO-2,2,4,6,6-PENTAMETHYL-PIPERIDINE

CAS RN: 63867754 NIOSH #: TM 7110000
mf: $C_{10}H_{19}N$; mw: 153.30

SYN: 1,2,3,6-TETRAHYDRO-2,2,4,6,6-PENTAMETHYLPYRIDINE

TOXICITY DATA:	3	CODEN:
orl-mus LD50:165 mg/kg		NATUAS 184,1707,59
ivn-mus LD50:58 mg/kg		NATUAS 184,1707,59

THR: HIGH orl, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

2,3-DIDEHYDRO-1,2,6,6-TETRAMETHYL-PIPERIDINE

CAS RN: 63867765 NIOSH #: TM 7120000
mf: $C_9H_{17}N$; mw: 139.27

SYN: 1,2,3,4-TETRAHYDRO-1,2,2,6-TETRAMETHYLPYRIDINE

TOXICITY DATA:	3	CODEN:
orl-mus LD50:310 mg/kg		NATUAS 184,1707,59
ivn-mus LD50:40 mg/kg		NATUAS 184,1707,59

THR: HIGH orl, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

3,4-DIDEHYDRO-2,2,6,6-TETRAMETHYL-PIPERIDINE

CAS RN: 1124692 NIOSH #: TM 7130000
mf: $C_9H_{17}N$; mw: 139.27

SYN: 1,2,3,6-TETRAHYDRO-2,2,6,6-TETRAMETHYLPYRIDINE

TOXICITY DATA:	3	CODEN:
orl-mus LD50:230 mg/kg		NATUAS 184,1707,59
ivn-mus LD50:34 mg/kg		NATUAS 184,1707,59

THR: HIGH orl, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

3',4'-DIDEOXYKANAMYCIN B SULFATE

CAS RN: 64070139 NIOSH #: NZ 3160000
mf: $C_{18}H_{37}N_5O_8 \cdot O_4S$; mw: 547.66

SYN: DKB SULFATE

TOXICITY DATA:	3-2	CODEN:
ipr-rat LD50:799 mg/kg		JJANAX 26,221,73
scu-rat LD50:1376 mg/kg		JJANAX 26,221,73
ivn-rat LD50:140 mg/kg		JJANAX 26,221,73
ims-rat LD50:560 mg/kg		JJANAX 26,221,73
ipr-mus LD50:431 mg/kg		JJANAX 26,221,73
scu-mus LD50:521 mg/kg		JJANAX 26,221,73
ivn-mus LD50:63 mg/kg		JJANAX 26,221,73
ims-mus LD50:396 mg/kg		JJANAX 26,221,73

THR: HIGH ivn, ims. MOD ipr, scu, ims.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

DI[TRIS-1,2-DIAMINOETHANECHROMIUM(III)] TRIPEROXODISULFATE

mf: $C_{12}H_{24}Cr_2N_{12}O_{24}S_6$; mw: 1016.78

Explodes.

DI[TRIS-1,2-DIAMINOETHANECOBALT(III)] TRIPEROXODISULFATE

mf: $C_{12}H_{24}Co_2N_{12}O_{24}S_6$; mw: 1030.66

Explodes.

1,5-DI(3,4-DIMETHOXYPHENYL)-3,7-DIAZAADMANTAN-9-ONE

CAS RN: 69352654 NIOSH #: HM 0200000
mf: $C_{24}H_{28}N_2O_5$; mw: 424.54

TOXICITY DATA:	3	CODEN:
ipr-mus LD50:100 mg/kg		JMPCAS 5,1293,62
ivn-rbt LD50:20 mg/kg		JMPCAS 5,1293,62

THR: HIGH ipr, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

DI(1,3-DIMETHYL-n-BUTYL) FLUOROPHOSPHATE

CAS RN: 311604 NIOSH #: TE 5020000
mf: $C_{12}H_{26}FO_3P$; mw: 268.35

SYN: DI(1,3-DIMETHYL-N-BUTYL) FLUOROPHOSPHONATE

TOXICITY DATA:	2	CODEN:
ihl-rat LCLo:1200 mg/m3/10M		JCSOA9 -,635,49
ihl-mus LCLo:1200 mg/m3/10M		JCSOA9 -,635,49

Toxicology Review: CHREAY 48,225,51.
THR: MOD ihl.
Disaster Hazard: When heated to decomp it emits very tox fumes of F^- and PO_x.

DIELDRIN

CAS RN: 60571 NIOSH #: IO 1750000
mf: $C_{12}H_8Cl_6O$; mw: 380.90

White crystals, odorless, insol in water, sol in common organic solvents. mp: 150°, vap. d: 13.2.

SYNS:
DIELDRINE (FRENCH)
ENT 16,225
HEXACHLOROEPOXYOCTAHYDRO-ENDO,EXO-DIMETHANONAPHTHALENE
NCI-c00124

TOXICITY DATA:	3	CODEN:
mmo-sat 1 mg/L		JOHEA8 68,184,77
mma-sat 1 mg/L		JOHEA8 68,184,77
mma-hmn:fbr 1 umol/L		MUREAV 42,161,77
dns-hmn:fbr 1 umol/L		MUREAV 42,161,77

orl-mus TDLo:15 mg/kg/(9D preg):TER	TJADAB 9,11,74
orl-ham TDLo:30 mg/kg/(8D preg):TER	TJADAB 9,11,74
orl-rat TDLo:200 mg/kg/2Y-C:ETA	FCTXAV 2,551,64
cyt-mus-ipr 1200 ug/kg	SOGEBZ 2(1),80,66
cyt-dck:lym 100 ppm	34LXAP -,555,76
orl-mus TDLo:15 mg/kg (9D preg)	TJADAB 9,11,74
orl-mus TDLo:26 mg/kg (6-18D preg)	CJPPA3 58,633,80
orl-mus TDLo:12500 ug/kg (1D male)	FCTXAV 13,317,75
orl-mus TDLo:67200 ug/kg (35D pre/1-21D preg)	RCOCB8 17,399,77
orl-ham TDLo:30 mg/kg/(8D preg) TFX:TER	TJADAB 9,11,74
orl-ham TDLo:30 mg/kg (8D preg)	TJADAB 9,11,74
orl-mus TDLo:546 mg/kg/65W-C TFX:CAR	ARTODN Suppl.2,197,79
orl-mus TD:610 mg/kg/73W-C TFX:NEO	FCTXAV 11,433,73
orl-mus TD:11 gm/kg/3Y-C:NEO	FCTXAV 11,415,73
unk-hmn LDLo:28 mg/kg	ATXKA8 22,115,66
orl-rat LD50:46 mg/kg	TXAPA9 14,515,69
ihl-rat LD50:43 mg/m3/4H	GIPZAB 8(4),30,64
skn-rat LD50:10 mg/kg	FMCHA2 -,D102,80
ipr-rat LD50:56 mg/kg	BJIMAG 21,269,64
ivn-rat LD50:9 mg/kg	BJIMAG 21,269,64
orl-mus LD50:38 mg/kg	SPEADM 74-1,-,74
ipr-mus LDLo:26 mg/kg	TXAPA9 23,288,72
ivn-mus LD50:10.5 mg/kg	TXAPA9 23,408,72
orl-dog LD50:65 mg/kg	GUCHAZ 6,198,73
unk-dog LDLo:65 mg/kg	AMIHBC 3,64,51
orl-mky LD50:3 mg/kg	32ZDAL -,79,70
ihl-cat LC50:80 mg/m3/4H	GTPZAB 8(4),30,64
orl-rbt LD50:45 mg/kg	PCOC** -,377,66
skn-rbt LD50:250 mg/kg	SPEADM 74-1,-,74
orl-pig LD50:38 mg/kg	JETOAS 7,159,74
orl-gpg LD50:49 mg/kg	PCOC** -,377,66
orl-ham LD50:60 mg/kg	TJADAB 9,11,74
orl-pgn LD50:27 mg/kg	TXAPA9 20,57,71
ivn-pgn LD50:1200 mg/kg	32ZDAL -,79,70
orl-ckn LD50:20 mg/kg	JEENAI 44,1013,51
orl-qal LD50:70 mg/kg	TXAPA9 20,57,71
orl-dck LD50:381 mg/kg	TXAPA9 20,57,71
unk-mam LD50:25 mg/kg	30ZDA9 -,63,71
orl-bwd LD50:23 mg/kg	TXAPA9 20,57,71

Carcinogenic Determination: Animal Positive IARC** 5,125,74.

TLV: Air: 0.25 mg/m3 DTLVS* 4,139,80. *Toxicology Review:* ENVRAL 7(2),243,74; JSIRAC 34,462,75; DITIAF 80(20),485,73; RREVAH 56,107,75; ECMAAI 14(3),141,73; BNYMAM 54,413,78; 85CVA2 5,250,70; 26UZAB 6,149,68/70; CTOXAO 13,231,78; EESADV 1,89,77; TXAPA9 10,613,67; 27ZTAP 3,-51,69. OSHA Standard: Air: TWA 250 ug/m3 (skin) (SCP-T) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. NCI Carcinogenesis Bioassay Completed; Results Indefinite: Mouse (NCITR* NCI-CG-TR-21,78); Negative: Rat (NCITR* NCI-CG-TR-21,78); (NCITR* NCI-CG-TR-22,78). "NIOSH Manual of Analytical Methods" VOL 3 S283.

THR: MUT data. An exper TER, ETA, NEO, CARC. HIGH hmn unk. HIGH orl, ihl, skn, ipr, ivn. MOD ivn. An insecticide. Dieldrin is absorbed readily from the skin as well as through other portals. It acts as a CNS stimulant, but the exact mechanism of this action is entirely unknown. It also greatly reduces or eliminates appetite, apparently by an action on the CNS. Either nervous symptoms or anorexia may appear first. However, appetite may occasionally return in animals which are extremely sick and which eventually die. See also chlorinated hydrocarbons.

Dangerous Acute Dose in Man: The effects of dieldrin and aldrin are similar both quantitatively and qualitatively in animals as well as in man. Persons exposed to oral dosages which exceed 10 mg/kg frequently become acutely ill. Symptoms may appear within 20 min and in no instance has a latent period of more than 12 hrs been confirmed. No death or permanent sequelae have been reported following known poisoning by aldrin or dieldrin in man. In an attempted suicide by ingestion of dieldrin the dosage was estimated at 25.6 mg/kg.

The oral LD_{50} of dieldrin for rats is 40-50 mg/kg, indicating a toxicity roughly five times that of DDT. The dermal LD_{50} of dieldrin in xylene for rats is only slightly less than the oral toxicity (60 mg/kg for the female and 90 mg/kg for the male) indicating an acute dermal toxicity roughly 40 times that of DDT. Tests with certain other solvents indicate a factor of only six times.

Dangerous Chronic Dose: Nothing is known with certainty about the chronic toxicity of dieldrin for man but poisoning has occurred from use of 0.5-2.5% suspensions. Exper animals show a wide species variation in their susceptibility to dieldrin. Repeated dermal applications of 10 mg or even 20 mg/kg are tolerated by rats, whereas rabbits are killed by both of these dosages. Animals have shown convulsions as much as 120 days following the last dose of dieldrin indicating that dieldrin or its derivatives and/or residual toxicant-induced injury may persist in the body for a long time once severe poisoning has occurred.

Signs and Symptoms of Poisoning in Man: Early symptoms include headache, nausea, vomiting, general malaise, and dizziness. With more severe poisoning, clonic and tonic convulsions ensue or they may appear without the premonitory symptoms just mentioned. Coma may or may not follow the convulsions. Hyperexcitability and hyperirritability are common findings.

Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of chlorides.

Treatment of Poisoning: Every effort should be made to remove dieldrin from the skin by thorough washing with soap and water or from the alimentary tract by the use of lavage and/or saline laxatives. Oil laxatives should be avoided. Exper with dogs and monkeys indicate that phenobarbital is effective as an antidote. It has been necessary to give the drug in large doses over a period of 2 weeks or more. The dosage which is required to keep poisoned animals from showing hyperexcitability or convulsions and which enables them to eat and behave normally is often a dosage which would induce sleep or even anesthesia in a normal animal of the same species. In human beings the dosage should be adjusted to the symptoms.

For further information see Vol. 1, No. 4 of *DPIM Report.*

orl-rat LD50:800 ug/kg	NCITR* NCI-CG-TR-198,80
orl-mus LD50:500 ug/kg	NCITR* NCI-CG-TR-198,80

Carcinogenesis Bioassay Completed; Results Positive: Mouse, Rat (NCITR* NCI-CG-TR-198,80); Negative: Mouse (NCITR* NCI-CG-TR-202,80) NTP Carcinogenesis Bioassay Completed as of September 1980.

THR: HIGH orl. An exper CARC, ETA.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and dioxin.

1,2,3,6,7,8-HEXACHLORODIBENZODIOXIN mixed with PENTACHLORO ISOMERS AND HEPTACHLORO ISOMERS 96.8%:1.97%:1.23% (NCIIR* NO1-CP-12338)

NIOSH #: ML 2705000

TOXICITY DATA: 3	CODEN:
orl-rat LD50:750 ug/kg	NCIIR* NO1-CP-12338
orl-mus LD50:500 ug/kg	NCIIR* NO1-CP-12338

THR: HIGH, orl.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-.

1,1,1,3,3,3-HEXACHLORO-2,2-DIFLUOROPROPANE

CAS RN: 3182261 NIOSH #: TY 1050000
mf: $C_3Cl_6F_2$; mw: 286.73

TOXICITY DATA: 2-1	CODEN:
orl-rat LD50:540 mg/kg	AIHAAP 30,470,69
skn-rbt LD50:4530 mg/kg	AIHAAP 30,470,69

THR: MOD orl; LOW skn.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and F^-.

HEXACHLORO DIPHENYL OXIDE

CAS RN: 55720995 NIOSH #: KO 0875000
mf: $C_{12}H_4Cl_6O$; mw: 376.86

Light yellow, very viscous liquid. bp: 230°-260° @ 8 mm, d: 1.60 @ 20°/60°, autoign. temp.: 1148°F, vap. d: 13.0.

SYNS:
HEXACHLOROPHENYL ETHER PHENYL ETHER HEXACHLORO

TOXICITY DATA: 3	CODEN:
orl-gpg LDLo:50 mg/kg	14CYAT 2,1707,63

OSHA Standard: Air: TWA 500 ug/m3 (SCP-I) FEREAC 39,23540,74.

THR: HIGH orl. See also ethers. See closely related compound, aldrin.

Fire Hazard: Low.

To Fight Fire: Water spray, fog, foam, dry chemical, CO_2.

Disaster Hazard: Dangerous; see chlorides.

HEXACHLORODISILANE

mf: Cl_6Si_2; mw: 268.83

Incomp: chlorine.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

1,1,1,2,2,2-HEXACHLOROETHANE

CAS RN: 67721 NIOSH #: KI 4025000
mf: C_2Cl_6; mw: 236.72

Rhombic triclinic or cubic crystals, colorless, camphor-like odor. mp: 186.6° (sublimes), d: 2.091, vap. press: 1 mm @ 32.7°. Readily sublimes without melting; bp: 186.8° (triple point). Sol in alc, benzene, chloroform, ether, oils. Insol in H_2O.

SYNS:
CARBON HEXACHLORIDE HEXACHLOROETHANE (DOT)
ETHANE HEXACHLORIDE HEXACHLOROETHYLENE
ETHYLENE HEXACHLORIDE NCI-C04604
HEXACHLOR-AETHAN (GERMAN) PERCHLOROETHANE

TOXICITY DATA: 3	CODEN:
orl-gpg LD50:4970 mg/kg	AIHAPP 40,187,79
orl-mus TDLo:230 gm/kg/78W-I:CAR	NCITR* NCI-CG-TR-68,78
orl-mus TD:460 gm/kg/78W-I:CAR	NCITR* NCI-CG-TR-68,78
orl-rat LD50:6000 mg/kg	NATUAS 210,744,66
ipr-mus LD50:4500 mg/kg	ARZNAD 11,902,61
ivn-dog LDLo:325 mg/kg	QJPPAL 7,205,34
scu-rbt LDLo:4000 mg/kg	QJPPAL 7,205,34

Carcinogenic Determination: Animal Positive IARC** 20,467,79.

TLV: Air: 10 ppm DTLVS* 4,213,80. *Toxicology Review:* AIHAAP 40,A46,79; 27ZTAP 3,76,69. OSHA Standard: Air: TWA 1 ppm (skin) (SCP-H) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-68,78); Negative: Rat (NCITR* NCI-CG-TR-68,78). Selected by NTP Carcinogenesis Bioassay as of December 1980. "NIOSH Manual of Analytical Methods" VOL 2 S10. NIOSH Current Intelligence Bulletin 27, 1978. Reported in EPA TSCA Inventory, 1980.

THR: HIGH via ivn; MOD orl, ipr, and dermal. An exper CARC. Liver injury has been described from exposure to this material. See also chlorinated hydrocarbons.

Explosion Hazard: Slight, by spont chemical reaction. Dehalogenation of this material by reaction with alkalies, metals, etc., will produce spont explosive chloroacetylenes.

Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of phosgene.

For further information see Vol. 2, No. 2 of *DPIM Report.*

1,2,3,4,10,10-HEXACHLORO-1,4,4a,5,8,8a-HEXAHYDRO-1,4:5,8-DIMETHANONAPHTHALENE endo,exo-, (CAST SOLID)

CAS RN: 309002 NIOSH #: IO 2150000
mf: $C_{12}H_8Cl_6$; mw: 364.90

SYN: ALDRIN, CAST SOLID (DOT)

TOXICITY DATA: 1 CODEN:
Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM*. 3,-,74. DOT: Flammable Gas, Label: Flammable Gas FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980.
THR: A simple asphyxiant. See argon.
Fire Hazard: Very dangerous, when exposed to heat or flame. Reacts violently with BrF_5, Cl_2, ClO_2, NF_3, liquid O_2, OF_2.
Spontaneous Heating: No.
Explosion Hazard: Dangerous, when exposed to heat or flame.
Disaster Hazard: Dangerous.
To Fight Fire: Stop flow of gas, CO_2 or dry chemical.
Incomp: halogens or interhalogens; oxidants, air (forms explosive mixtures).

METHANE DICHLORIDE

CAS RN: 75092 NIOSH #: PA 8050000
mf: CH_2Cl_2; mw: 84.93

Colorless volatile liquid. bp: 39.8°, lel = 15.5% in O_2, uel = 66.4% in O_2, fp: −96.7°, d: 1.326 @ 20°/4°, autoign. temp.: 1139°F, vap. press: 380 mm @ 22°, vap. d: 2.93.

SYNS:
CHLORURE DE METHYLENE (FRENCH)
DICHLOROMETHANE (DOT)
FREON 30
METHYLENE BICHLORIDE
METHYLENE CHLORIDE (DOT)
METHYLENE DICHLORIDE
METYLENU CHLOREK (POLISH)
NCI-C50102

TOXICITY DATA: 3 CODEN:

skn-rbt 810 mg/24H SEV	JETOAS 9,171,76
eye-rbt 162 mg MOD	JETOAS 9,171,76
eye-rbt 10 mg MLD	TXCYAC 6,173,76
eye-rbt 17500 mg/m3/10M	TXCYAC 6,173,76
mmo-sat 5700 ppm	MUREAV 56,245,78
mma-sat 5700 ppm	MUREAV 56,245,78
dni-hmn:fbr 5000 ppm/1H-C	MUREAV 81,203,81
dni-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
sce-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
ihl-rat TCLo:4500 ppm/24H (1-17D preg)	TXAPA9 52,29,80
ihl-rat TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-mus TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-rat TCLo:500 ppm/6H/2Y:ETA	TXAPA9 48,A185,79
ihl-hmn TCLo:500 ppm/1Y-I:CNS	ABHYAE 43,1123,68
ihl-hmn TCLo:500 ppm/8H:BLD	SCIEAS 176,295,72
orl-rat LD50:167 mg/kg	DOWSD* 1/26/76
ihl-rat LC50:88000 mg/m3/30M	FAVUAI 7,35,75
ihl-mus LC50:14400 ppm/7H	NIHBAZ 191,1,49
ipr-mus LD50:1500 mg/kg	TXAPA9 9,139,66
scu-mus LD50:6460 mg/kg	TXAPA9 4,354,62
orl-dog LDLo:3000 mg/kg	QJPPAL 7,205,34
ihl-dog LCLo:14108 ppm/7H	NIHBAZ 191,1,49
ipr-dog LDLo:950 mg/kg	TXAPA9 10,119,67
scu-dog LDLo:2700 mg/kg	QJPPAL 7,205,34
ivn-dog LDLo:200 mg/kg	QJPPAL 7,205,34
ihl-cat LCLo:43400 mg/m3/4.5H	AHBAAM 116,131,36
orl-rab LDLo:1900 mg/kg	HBTXAC 1,94,56
scu-rbt LDLo:2700 mg/kg	QJPPAL 7,205,34
ihl-gpg LCLo:5000 ppm/2H	FLCRAP 1,197,67

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 3,-,74. Carcinogenic Determination: Indefinite IARC** 20,449,79.
TLV: Air: 100 ppm DTLVS* 4,275,80. *Toxicology Review:* FAZMAE 18,365,74; 27ZTAP 3,94,69. OSHA Standard: Air: TWA 500 ppm; CL 1000; Pk 2000/5M/2H (SCP-J) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Methylene Chloride recm std: Air: TWA 75 ppm; Pk 500 ppm/15M NTIS**. Currently tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" Vol 1 127, Vol 3 S329. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: MUT data. A skn, eye irr. An exper ETA, ± CARC. A hmn CNS, BLD. HIGH orl, ivn; MOD ipr, orl, scu, ihl; LOW ihl, scu. See also chlorinated aliphatic hydrocarbons. Very dangerous to the eyes. Except for its property of inducing narcosis, it has very few other acute toxicity effects. Its narcotic powers are quite strong, and in view of its great volatility, care should be taken in its use. It will not form explosive mixtures with air at ordinary temp. However, it can be decomp by contact with hot surfaces and open flame, and it can then yield toxic fumes, which are irr and will thus give warning of their presence. It has been used as an anesthetic in Europe and is still used there for local anesthesia. Exper have shown that 25,000 ppm conc for 2 hr exposures were not lethal. Conc of 7,200 ppm after 8 min caused paresthesia of the extremities; after 16 min, acceleration of the pulse to 100; during the first 20 min, congestion in the head, a sense of heat and slight irr of the eyes. At a level of 2,300 ppm, there was no feeling of dizziness during 1-hr exposures, but nausea did occur after 30 min of exposure. The limit of perception by smell is set at 25-50 ppm conc. Can cause a dermatitis upon prolonged skin contact. A respirator for organic vapors and fumes should be worn to avoid excessive inhal. Used as a food additive permitted in food for human consumption.
Fire Hazard: Reacts violently with Li, NaK, potassium-*tert*-butoxide, (KOH + *n*-methyl-*n*-nitrosourea).
Explosion Hazard: None under ordinary conditions, but will form explosive mixtures in atmosphere having high oxygen content, in liquid O_2, N_2O_4, K, Na, NaK.
Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of phosgene.

METHANESULFONIC ACID

CAS RN: 75752 NIOSH #: PB 1140000
mf: CH_4O_3S; mw: 96.11

Solid. Sol in water, alc and ether; d: 1.4812 @ 18°/4°; mp: 20°; bp: 167° @ 10 mm. Corrosive to iron, steel, brass, copper and lead.

SYN: WSQ 1

Disaster Hazard: Dangerous; shock will explode it; when heated, burns and emits acrid fumes; can react on contact with oxidizing materials.

NAPHTHA, COAL TAR

CAS RN: 8030306 NIOSH #: QI 9450000

Dark straw-colored to colorless liquid. Sol in benzene, toluene, xylene, etc. bp: 149°-216°, flash p: 107°F (CC), d: 0.862-0.892, autoign. temp.: 531°F.

SYNS:

BENZIN
160 DEGREE BENZOL
COAL TAR NAPHTHA DISTILLATE
LIGHT LIGROIN
NAFTA (POLISH)
NAPHTHA
NAPHTHA, PETROLEUM
PETROLEUM BENZIN
PETROLEUM NAPHTHA

TOXICITY DATA: 2 CODEN:
ihl-rat LCLo:1600 ppm/6H CHINAG 17,1078,39

TLV: Air: 300 ppm DTLVS* 4,433,80. OSHA Standard: Air: TWA 100 ppm (SCP-G) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 2 S86. Reported in EPA TSCA Inventory, 1980.

THR: MOD via inhal route. Can cause unconsciousness which may go to coma, stentorious breathing and bluish tint to the skin. Recovery follows removal from exposure. In mild form, intoxication resembles drunkenness. On a chronic basis no true poisoning; sometimes headache, lack of appetite, dizziness, sleeplessness, indigestion and nausea. A common air contaminant. See oils, mineral.

Fire Hazard: Mod, when exposed to heat or flame; can react with oxidizing materials. Keep containers tightly closed.

Explosion Hazard: Slight.

To Fight Fire: Foam, CO_2, dry chemical.

alpha-NAPHTHAL

CAS RN: 66773 NIOSH #: QJ 0175000

TOXICITY DATA: 3 CODEN:
scu-dog LDLo:330 mg/kg ZMWIAJ 19,545,1881

Reported in EPA TSCA Inventory, 1980.

THR: HIGH scu.

NAPHTHALENE

CAS RN: 91203 NIOSH #: QJ 0525000
mf: $C_{10}H_8$; mw: 128.18

Aromatic odor, white, crystalline, volatile flakes. mp: 80.1°, bp: 217.9°, flash p: 174°F (OC), d: 1.162, lel = 0.9%, uel = 5.9%, vap. press: 1 mm @ 52.6°, vap. d: 4.42. Autoign temp: 1053°F (567°C); sol in alc, benzene. Insol in water; very sol in ether, CCl_4, CS_2 hydronaphthalenes, in fixed and volatile oils.

SYNS:

CAMPHOR TAR
MOTH BALLS
MOTH FLAKES
NAFTALEN (POLISH)
NAPHTHALINE
NAPHTHENE
NCI-C52904
TAR CAMPHOR
WHITE TAR

TOXICITY DATA: 3 CODEN:
ipr-rat TDLo:5925 mg/kg (1-15D preg) TXAPA9 48,A35,79
skn-rbt 495 mg open MLD UCDS** 1/11/68
eye-rbt 100 mg MLD BIOFX* 16-4/70
scu-rat TDLo:3500 mg/kg/12W-I:ETA APAVAY 329,141,56
orl-chd LDLo:100 mg/kg 28ZRAQ -,228,60
unk-man LDLo:74 mg/kg 85DCAI 2,73,70
orl-rat LD50:1780 mg/kg BIOFX* 16-4/70
ipr-mus LD50:150 mg/kg NTIS** AD691-490
scu-mus LD50:969 mg/kg TOIZAG 20(5/6),772,73
ivn-mus LD50:100 mg/kg CSLNX* NX#00203
orl-dog LDLo:400 mg/kg HBAMAK 4,1289,35
orl-cat LDLo:1000 mg/kg HBAMAK 4,1289,35
orl-rbt LDLo:3 gm/kg HBAMAK 4,1289,35
orl-mam LD50:1000 mg/kg FMCHA2 -,D213,80

Aquatic Toxicity Rating: TLm96:10-1 ppm WQCHM* 3,-,74. *TLV:* Air: 10 ppm DTLVS* 4,293,80. *Toxicology Review:* 38ZNAA 1(1),93,71; JOPDAB 59,1,61; 27ZTAP 3,30,69. OSHA Standard: Air: TWA 10 ppm (SCP-T) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. Currently Tested by NTR for Carcinogenesis by Standard Bioassay Protocol as of Sept 1980. "NIOSH Manual of Analytical Methods" VOL 3 S292. Reported in EPA TSCA Inventory, 1980.

THR: MOD orl and HIGH ipr, ivn. An exper ETA. May be used as an insecticide. Systemic reactions include nausea, headache, diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsions and coma. Poisoning may occur by ing of large doses, inhal or skn absorption.

Fire Hazard: Mod, when exposed to heat or flame; reacts with oxidizing materials. Reacts violently with CrO_3.

Spontaneous Heating: No.

Explosion Hazard: Mod, in the form of dust, when exposed to heat or flame.

To Fight Fire: Water, CO_2, dry chemical.

Incomp: Dinitrogen pentaoxide.

1-NAPHTHALENEACETAMIDE

CAS RN: 86862 NIOSH #: QJ 0590000
mf: $C_{12}H_{11}NO$; mw: 185.24

SYNS:

NAPHTHALENE ACETAMIDE
ALPHA-NAPHTHALENEACETAMIDE
ALPHA-NAPHTHYLACETAMIDE
1-NAPHTHYLACETAMIDE

TOXICITY DATA: 2 CODEN:
orl-mam LD50:1000 mg/kg FMCHA2 -,D143,75

Reported in EPA TSCA Inventory, 1980.

THR: MOD orl.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

1-NAPTHTALENEACETIC ACID

CAS RN: 86873 NIOSH #: QJ 0875000
mf: $C_{12}H_{10}O_2$; mw: 186.22

TOXICITY DATA: 3-1 CODEN:
orl-mus LD50:5100 mg/kg 12VXA5 9,1179,76
ipr-mus LD50:55 mg/kg 12VXA5 9,1179,76

THR: HIGH ipr; LOW orl. See also terbium, chlorides and rare earths.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

TERBIUM CITRATE

CAS RN: 13482490 NIOSH #: TZ 8600000
mf: $C_6H_8O_7 \cdot Tb$; mw: 351.06

SYN: 2-HYDROXY-1,2,3-PROPANECARBOXYLIC ACID TERBIUM (3+) SALT (1:1)

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:121 mg/kg AEHLAU 5,437,62
ipr-gpg LD50:74 mg/kg AEHLAU 5,437,62

THR: HIGH ipr. See also terbium, rare earths.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TERBIUM(III) NITRATE, HEXAHYDRATE (1:3:6)

CAS RN: 13451199 NIOSH #: WY 9625000
mf: $N_3O_9 \cdot Tb \cdot 6H_2O$; mw: 453.07

SYN: NITRIC ACID, TERBIUM(3+) SALT, HEXAHYDRATE

TOXICITY DATA: 3-2 CODEN:
ipr-rat LD50:260 mg/kg TXAPA9 5,750,63
ipr-mus LD50:480 mg/kg TXAPA9 5,750,63

Toxicology Review: JPMSAE 54,663,65.
THR: HIGH-MOD ipr. See also nitrates, terbium and rare earths.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and nitrates.

TERBIUM OXIDE

CAS RN: 12738760 NIOSH #: WY 9800000

TOXICITY DATA: 2 CODEN:
orl-rat LDLo:1000 mg/kg CURL** 35,25,60

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl. See also terbium and rare earths.

TERBUTALINE SULPHATE

CAS RN: 23031325 NIOSH #: DN 9000000
mf: $C_{24}H_{36}N_2O_8S$; mw: 512.68

SYN: BENZYL ALCOHOL, ALPHA-(BUTYLAMINO)METHYL)-3,5-DIHYDROXY-, SULFATE (2:1)

TOXICITY DATA: 3 CODEN:
orl-mus LD50:205 mg/kg APTOA6 31,49,72
ipr-mus LD50:262 mg/kg APTOA6 31,43,72

THR: HIGH orl, ipr.
Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

TEREPHTHALALDEHYDE

CAS RN: 623278 NIOSH #: WZ 0430000
mf: $C_8H_6O_2$; mw: 134.14

SYNS:
P-BENZENEDICARBOXALDEHYDE
1,4-BENZENEDICARBOXALDEHYDE (9CI)
1,4-DIFORMYLBENZENE
P-FORMYLBENZALDEHYDE
4-FORMYLBENZALDEHYDE
P-PHTHALALDEHYDE
TEREPHTALDEHYDE
TEREPHTHALIC ALDEHYDE
TEREPHTALDEHYDES (FRENCH)

TOXICITY DATA: 2 CODEN:
unk-mus LDLo:805 mg/kg COREAF 246,851,58

Reported in EPA TSCA Inventory, 1980.
THR: MOD unk. See also aldehydes.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TEREPHTHALIC ACID

CAS RN: 100210 NIOSH #: WZ 0875000
mf: $C_8H_6O_4$; mw: 166.14

White crystals or powder. d: 1.51; sublimes @ 300°. Insol in water, chloroform, ether, acetic acid; slightly sol in alc; sol in alkalies.

SYNS:
ACIDE TEREPHTALIQUE (FRENCH)
P-BENZENEDICARBOXYLIC ACID
1,4-BENZENEDICARBOXYLIC ACID
KYSELINA TERFTALOVA (CZECH)

TOXICITY DATA: 2-1 CODEN:
eye-rbt 500 mg/24H MOD 28ZPAK -,52,72
orl-rat LD50:18800 mg/kg 28ZPAK -,52,72
ipr-mus LD50:1430 mg/kg CPBTAL 16,1655,68
ivn-dog LDLo:767 mg/kg TXAPA9 18,469,71

Toxicology Review: BPCT** -,183,74. Reported in EPA TSCA Inventory, 1980.
THR: MOD ivn, ipr; LOW orl. An eye irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes. Can explode during preparation.

TEREPHTHALIC ACID, DISODIUM SALT

CAS RN: 10028703 NIOSH #: WZ 1400000
mf: $C_8H_4O_4 \cdot 2Na$; mw: 210.10

TOXICITY DATA: 2-1 CODEN:
ipr-mus LD50:4600 mg/kg CPBTAL 16,1655,68
scu-mus LD50:8600 mg/kg CPBTAL 16,1655,68
ivn-mus LDLo:1300 mg/kg CPBTAL 16,1655,68

THR: LOW ipr, scu. MOD ivn.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TEREPHTHALIC ACID METHYL ESTER

CAS RN: 120616 NIOSH #: WZ 1225000
mf: $C_{10}H_{10}O_4$; mw: 194.20

SYNS:
1,4-BENZENEDICARBOXYLIC ACID, DIMETHYL ESTER (9CI)
DIMETHYL-1,4-BENZENEDICARBOXYLATE
DIMETHYLESTER KYSELINY ISOFTALOVE (CZECH)
DIMETHYL-P-PHTHALATE
DIMETHYL TEREPHTHALATE
METHYL-4-CARBOMETHOXYBENZOATE
NCI-C50055

TOXICITY DATA:	3	CODEN:
eye-rbt 500 mg/24H MOD		28ZPAK -,47,72
orl-mus TDLo:216 gm/kg/103W-C TFX:CAR		NCITR* NCI-CG-TR-121,79
orl-mus TD:433 gm/kg/103W-C TFX:CAR		NCITR* NCI-CG-TR-121,79
orl-rat LD50:4390 mg/kg		28ZPAK -,47,72
ipr-rat LD50:3900 mg/kg		AIHAAP 34,455,73

Toxicology Review: BPCT** -,183,74. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-121,79); Results Negative: Rat (NCITR* NCI-CG-TR-121,79). Reported in EPA TSCA Inventory, 1980.

THR: An exper CARC; MOD-LOW orl, ipr. An eye irr. See also esters.

Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

TEREPHTHALOHYDROXAMIC ACID

CAS RN: 20073807 NIOSH #: WZ 1575000
mf: $C_8H_8N_2O_4$; mw: 196.18

SYNS:
1,4-BENZENEDICARBOXAMIDE, N,N'-DIHYDROXY- (9CI) TEREPHTHALODIHYDROXAMIC ACID

TOXICITY DATA:	3-2	CODEN:
ivn-rat LDLo:322 mg/kg		TXAPA9 18,469,71
ipr-mus LD50:740 mg/kg		TXAPA9 18,469,71
ivn-dog LDLo:282 mg/kg		TXAPA9 18,469,71
ivn-cat LDLo:330 mg/kg		TXAPA9 18,469,71
ivn-rbt LDLo:936 mg/kg		TXAPA9 18,469,71

THR: HIGH ivn; MOD ipr.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

5,5'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(2,4-DIAMINO-1-ETHYLPYRIMIDINIUM-DI-p-TOLUENESULFONATE

NIOSH #: UW 5976500
mf: $C_{32}H_{34}N_{10}O_2 \cdot 2C_7H_7O_3$ S; mw: 933.16

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 840 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:15 mg/kg		JMCMAR 22,134,79

THR: MUT data. HIGH ipr. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

5,5'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(2,4-DIAMINO-1-METHYLPYRIMIDINIUM-DI-p-TOLUENESULFONATE

NIOSH #: UW 5976600
mf: $C_{30}H_{30}N_{10}O_2 \cdot 2C_7H_7O_3$ S; mw: 905.10

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 840 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:12 mg/kg		JMCMAR 22,134,79

THR: HIGH ipr; MUT data. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

5,5'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(2,4-DIAMINO-1-PROPYLPYRIMIDINIUM-DI-p-TOLUENESULFONATE

NIOSH #: UW 5976700
mf: $C_{34}H_{38}N_{10}O_2 \cdot 2C_7H_7O_3$ S; mw: 961.22

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 840 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:50 mg/kg		JMCMAR 22,134,79

THR: MUT data. HIGH ipr. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of SO_x and NO_x.

2,2'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(1-ETHYLPYRIDINIUM) DI-p-TOLUENESULFONATE

NIOSH #: UU 6925700
mf: $C_{34}H_{32}N_4O_2 \cdot 2C_7H_7O_3$ S; mw: 871.10

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 290 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:43 mg/kg		JMCMAR 22,134,79

THR: MUT data. HIGH ipr. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

4,4'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(1-ETHYLPYRIDINIUM) DI-p-TOLUENESULFONATE

NIOSH #: UU 6926110
mf: $C_{34}H_{32}N_4O_2 \cdot 2C_7H_7O_3$ S; mw: 871.10

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 1300 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:2500 ug/kg		JMCMAR 22,134,79

THR: MUT data. HIGH ipr. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

2,2'-(TEREPHTHALOYLBIS(IMINO-p-PHENYLENE))BIS(1-METHYLPYRIDINIUM) DI-p-TOLUENESULFONATE

NIOSH #: UU 6925800
mf: $C_{32}H_{28}N_4O_2 \cdot 2C_7H_7O_3$ S; mw: 843.04

TOXICITY DATA:	3	CODEN:
dnd-mus:lym 290 nmol/L		JMCMAR 22,134,79
ipr-mus LD10:65 mg/kg		JMCMAR 22,134,79

THR: MUT data. HIGH ipr. See also sulfonates.

Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.